

Amateur Radio

VOL 54, No 3, MARCH 1986



JOURNAL OF THE WIRELESS
INSTITUTE OF AUSTRALIA



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Joseph VK3CBQ and son Joseph VK3PIO in front of the transmitter and computer. See story this issue.

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Each year, the Publication Committee of the WIA select the winners of three Amateur Radio Awards — the Alan Shawsmith Journalistic, Higginbotham and Technical Awards. The Shawsmith Award is made available courtesy of Alan VK4SS, and is awarded to the author of the article which is deemed by the Committee as the best article for the year. The Higginbotham Award is awarded for meritorious service to amateur radio, whilst the Technical Award is for the best technical article printed in Amateur Radio magazine. Later in the year it is anticipated to print an article describing the origin of these awards and the recipients to date of them. To be eligible for one of the awards it is necessary to write an article for Amateur Radio. The 1985 winners were announced in last month's magazine.

This month's cover features one of the young members of the community who has been captured by the fascination of amateur radio. Joseph VK3PIO, was just 10 years of age when he sat for, and passed, his first amateur radio examination. See page 57.

With the Antarctic frequently being high on the most-wanted DX lists, Tony G4FAI, AP's London correspondent, looks at possibly the first experiments in radio from the South Pole, page 17. The environment was not at all kind to these experimenters and many lesser people would not have persevered as these early pioneers did.

The weather is holding up reasonably well for some antenna work and Ted VK4YHG, page 8, explains how to get another season out of a TA33 beam whilst Joe VK4AGL, page 10, has found a nifty words for constructing a Rhombic. And for a novel approach, view the functional Yagi at the QTH of Ron VK3MB. Ron has used a rotary clothesline as the basis for his antenna.

DEADLINE

All copy for inclusion in the May 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by midday, 19th March 1986.

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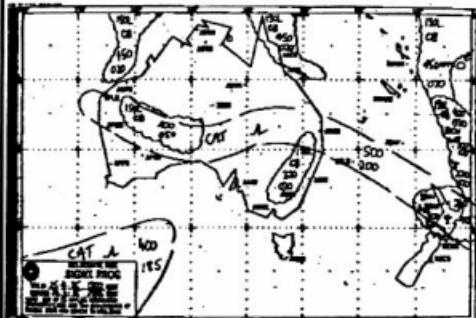
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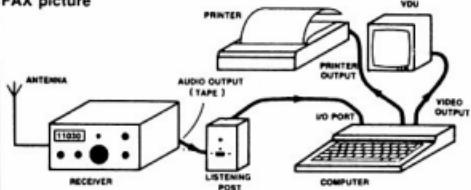


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Editor's Comment

THE FUTURE OF AMATEUR RADIO

By now you will all have had time to digest the suggestions for the future which were put forward in the discussion paper by VKs 3PC and 2ZTB and published in the February issue. Since then we have received relevant material from several other sources.

One of these is the announcement by the Canadian Radio Relay League of proposals by the Canadian DOC to restructure their amateur licensing system. Canadian amateurs have six months in which to discuss the issues and make formal comment to the Department. Essentially, a no-code entry level certificate is proposed, permitting the use of commercial transmitters (no home-brew) on VHF only, all modes. Passing a 12WPM code test would authorise HF operation as well. The highest level certificate would require advanced theory examination and grant all privileges, including home building transmitters and responsibility for repeaters etc.

Letters from our own members point out the

expense involved in setting up a station with new commercial equipment, and I personally would be sorry to see a system under which people of our own Novice standard, for example, were prevented from building even a simple CW transmitter. The CRRRL announcement, in its first paragraph, states the average age of VE amateurs to be about 55, with few young recruits. This all-too-familiar situation can only be aggravated by measures which make the initial cost of a station even higher than now. But on the other hand, how many of our newcomers built their own first transmitter? How many (as well as your home-brewing Editor) have built their first (or any) transmitter over the last 40 years? Seriously, we would like to know.

On a slightly different theme, a letter from Tony Tregale VK3QO, is published in this month's "Over to You". In which he objects to the January editorial arguments in favour of joining the Institute. Tony is a member of the

WIA and is well-known for his years of service as Federal EMC Co-ordinator, an onerous post for which no successor has yet volunteered. Presumably he is a member for reasons other than those mentioned in the editorial, so any suggestions he can add as to why VK amateurs should join the WIA would be appreciated. We do feel that his remarks about "organisations like the WIA" promoting discrimination "to destroy the original concepts of the Amateur Radio Movement" are totally unfounded. Without such organisations his intangible Movement would be only a number of leaderless individuals rushing off in all directions at once! Discrimination is not encouraged by our national amateur societies. Their existence and strength is the bond which prevents amateur radio from disintegrating into self-seeking anarchy. If this were the appearance of the hobby no responsible government would license it!

Bill Rice VK3ABP
Editor

THE RON WILKINSON ACHIEVEMENT AWARD

As outlined in Amateur Radio, March 1978, the WIA Award, The Ron Wilkinson Achievement Award was made possible by the generosity of Mrs Mary Wilkinson, widow of the late Ron Wilkinson VK3AKC.

Ron Wilkinson VK3AKC, of Geelong, died on 22nd March 1977. He had built up a reputation over many years for activities in the VHF/UHF parts of the spectrum in particular. In mid-year, Mrs Wilkinson proposed a donation of \$1100 to commemorate his passing. Discussions ensued between her and the Federal President and Executive Vice-Chairman of the WIA as a result of which an annual Award was selected as a suitable memorial.

Mrs Wilkinson's donation to fund this Award was invested in Government Bonds so that the annual interest would meet the costs of the annual award.

The winners of this Award are announced each year in the March issue of Amateur Radio.

DETAILS OF THE RON WILKINSON ACHIEVEMENT AWARD

NAME: The Ron Wilkinson Achievement Award.

FREQUENCY OF AWARD: The Award is to be made annually during the month of March — nominal date 3rd March and relates to the previous calendar year insofar as this is practicable.

REASON FOR AWARD: The Award is for special achievement in any facet of amateur radio. The following examples illustrate the level of achievement which will be taken into consideration in making the Award.

Outstanding communication achievement; Article for Amateur Radio Magazine; Holder of Australian DXCC; Development of state-of-the-art techniques; Involvement in Institute affairs; Microwave activity; Involvement in WICEN, Education, Clubs, or similar; Achievement in using amateur Satellites; Notable public service

These are only examples. As can be seen the Award is extended to cover the whole

gambit of amateur radio activities.

THE AWARD: The Award is to be funded from the interest from the donation by Mrs Wilkinson, supplemented from Institute funds, if required.

The Award is made up of — a Certificate; \$50 cash; Books to the value of \$50 from Maggabs and WIA Subscription paid for one year.

In the event of a joint Award, then each recipient will receive — a Certificate; WIA Subscription for one year and a proportionate amount of cash and books from Maggabs.

METHOD OF SELECTION: The Award will only be available to amateurs from VK call areas; Preference will be given to WIA members; Individual amateurs may nominate or make personal application to the President of their Division by 31st October each year; The President of the Division is then to forward the most meritorious applications/nominations to the Executive by 30th November, only after satisfying himself that the applications/nominations are worthy of consideration; The Executive will nominate the recipient of the Award by 31st January, subject to Federal Council agreement if considered necessary;

The Award will be announced in Amateur Radio for March. The nominal Award date is 3rd March each year — the birthday of the late Ron Wilkinson VK3AKC; In the event of no nominations forthcoming, the Executive may select a recipient.

CERTIFICATE: A condition is the Certificate will contain a list of all nominees year by year.

RECIPIENTS TO DATE

1977

Jointly by Wally Green VK6WG and Reg Galle VK5QR for a record-breaking 1296MHz contact.

1978

Jointly by Alf Chandler VK3LC for Intruder Watch co-ordination and Winston Nichols VK7EM for VHF and ATV work.

1979

Jointly by David Wardlaw VK3ADW and Michael Owen VK3KI for work concerning WARC 79.

1980

Cec Bardwell VK2IR for services to education in VK2.

1981

Ray Jones VK3RJ for services to the QSL Bureaus.

1982

Dick Norman VK2BDN for VHF/UHF activities.

1983

Jointly by Peter Smith VK1DS and Ken Palliser VK3GJ for design and construction of VHF repeaters.

1984

Lyle Patison VK2ALU for Moon-bounce Communications.

WINNER FOR 1985

The Institute had a difficult task again this year to select one winner for this Award from the very high standard of nominations received. It was eventually decided to grant the Award to Doug McArthur VK3JUM for his activities involving EME and particularly the "Aircraft Enhancement Mode" of VHF Propagation. This latter has stimulated much interest and correspondence during the year since Doug's article was printed in Amateur Radio. Many amateurs are now involved in experiments using this mode of communication.

From the involvement of so many amateur stations, it is hoped that a complete understanding of the mechanism of this type of propagation can be gained and, once again, the Amateur Service can make a significant contribution to the knowledge and use of anomalous modes of propagation to the benefit of other users of the radio spectrum.

Congratulations Doug — and keep up the good work.

REPEATER IDENT BOARD

Several WICEN exercises in the Brisbane area, prior to 1980, showed a need for a portable repeater for WICEN use. Such a repeater would enable two metres to be used over a much larger area, and be of inestimable value in an emergency situation. At this time, the only repeater licences issued were for fixed stations, but submissions had been made to DOC to allow the licensing of portable repeaters. While this was going through the channels, work was going ahead with the assembly of the equipment in anticipation of eventual approval.

The basic idea was to use two normal transceivers interconnected through a control box, which would automatically carry out all the switching and identification functions. The main item to be designed was the control box.

Of the main functions in this box, the only modern design that appeared to be available was for the control board. This was found in the March 1979 issue of QST, in an article entitled "Using CMOS ICs". But, despite much searching, nothing could be found that would give the identification and timer functions. It was decided that a completely new board would be designed. As George McLucas VK4AMG, had recently designed and constructed a beacon identifier using an EPROM, it seemed that this was the obvious route to take.

The Mark 1 version gave eight different fixed length identifications, but, with a number of minor problems showing up in the circuitry generally. It was decided to re-design the board and at the same time, use an EPROM with more capacity. The final version, the subject of this article, is an identifier capable of 64 separate messages, each of a maximum of 250 bits long. The missing six bits give an optional three bits at the start of the message, and a mandatory three bits at the finish, to allow the detection of the end of the message. This would allow, for instance, eight call signs, each with eight different suffixes, indicating operational parameters. For example, VK4RWI normal ident, VK4RWI-H high SWR, VK4RWI-L low voltage, VK4RWI-D unauthorised access to

repeater housing, etc. The advantage of the multiple call signs is that it allows the WICEN portable repeater to fill in as a backup to any of the repeaters around Brisbane should any of them fail. In addition, several personal call signs have been programmed to allow home testing. These have the suffix TEST.

This repeater board is not restricted to repeater use but could be programmed to send short CW messages and, used in this manner, would be of value in a contest.

The finished board is 155 x 90mm and contains seven CMOS ICs, one EPROM, a 5V regulator, plus a handful of other components. Current drain in the standby state is 20mA and in operation it draws 70mA, excluding the relay and any indicator LEDs, if these are used.

IC1, a 4047, is a multi-vibrator providing clock pulses for the board. The setting of this also provides a control for the speed of the ident, and, with this set to 10WPM, the interval between ident will be about four minutes, well within the DOC requirement of five minutes.

IC2, a 4011, gates a and b are used as an audio oscillator for the CW ident, with the square wave output filtered and shaped by the subsequent RC network. Gate c allows the clock pulses to go through to the counter when enabled by IC6a. Gate d is used as an inverter in the timing network.

IC3, a 4040, is the counter. Outputs Q1-Q8 are fed to IC4, the 2716 EPROM, Q9-Q12 are fed to IC5a, a 4012, which sets the time ident. Connection between IC3 and IC5a is by means of four links. By installing one link only on Q9, IC3, the interval would be about 16 seconds. This is ideal for setting up and testing. When all links are in place the maximum time interval is available.

The output of IC5a is inverted by IC2d, which passes a clock pulse, resetting IC3 to 0 and resetting flip flops IC6a and b (4027) in preparation for the next request to ident. IC6a in turn closes gate IC2c stopping clock pulses from reaching IC3. When the request to ident comes from the control board, it causes a change of state of both IC6a and IC6b. IC6a turns on gate IC2c to allow clock pulses into the counter through IC3. One output of IC6b is fed to the PTT line of the transmitter through a buffer transistor, and/or a DIL relay. The PTT contact on this relay can be linked either to ground or to +volts, depending on the transmitter requirement. The other output of IC6b prepares the EPROM for use.

IC7/IC8 (4044) are electronic switches. Two banks of four DIL switches enable the required electronic switch which, in turn, enables selection of any one of the data lines from the EPROM. These electronic switches could be deleted and one data line permanently selected with a link. Another DIL switch is fitted to address lines 8, 9, and 10 on IC4. This allows eight different starting locations for the EPROM. Alternatively, these three lines could be addressed through a transistor interface and enabled by detector units for the various operating parameters. Another alternative would be for lines 8, 9, 10 to be taken to Q9, Q10, Q11 of IC3, giving eight different messages, each of 2k bits long, ideal for beacons, etc. The EPROM is programmed with the CW message on eight data lines. For example, the message VK4RWI takes up approximately 110 bits on data line D0, in the first block of messages. Each bit is equivalent to a unit in normal CW and the EPROM is programmed accordingly. For example, V would be programmed as 10110111 and J as 101110111011.

Output of IC7/IC8 is fed to IC2a, which toggles the audio oscillator on and off. It is also fed to a transistor pump circuit, which functions as an end of message detector generating a pulse at the output of IC5b. This in turn toggles IC6b switching the PTT line off and resetting the EPROM to the standby (low power) state. The bias resistor on this transistor is critical and is selected to ensure that the tone oscillator does not 'pop' in the standby state. The value varies between 47k and 100k. The capacitor on the emitter determines the tail length of the ident.

IC3 continues to count until all four inputs of IC5a are taken high. The output then resets IC6a and b in readiness for the next ident request.

Geoff Adcock VK4AG
32 Achilles Street, Kedron, Qld. 4031
Brian Mennis VK4XAS
11 Jethro Street, Aspley, Qld. 4034



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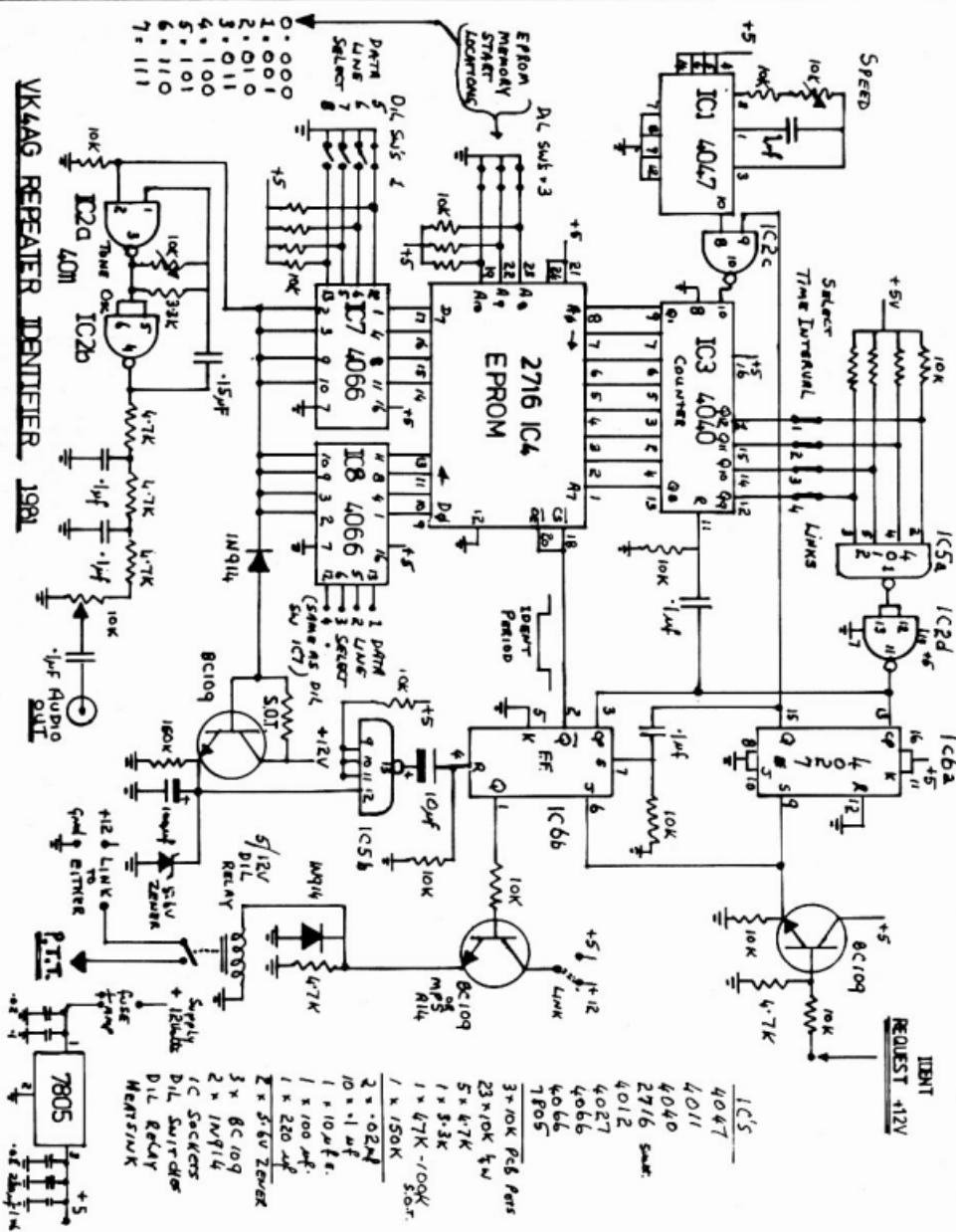
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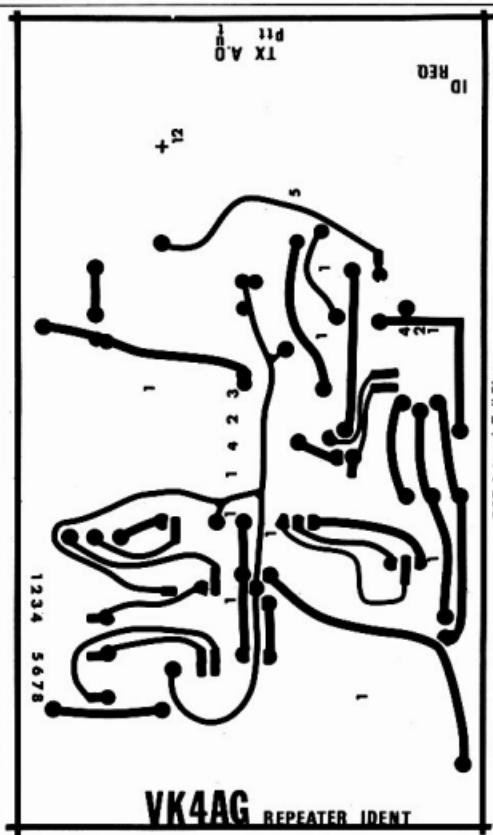
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VKLAG REPEATER IDENTIFIER 1981



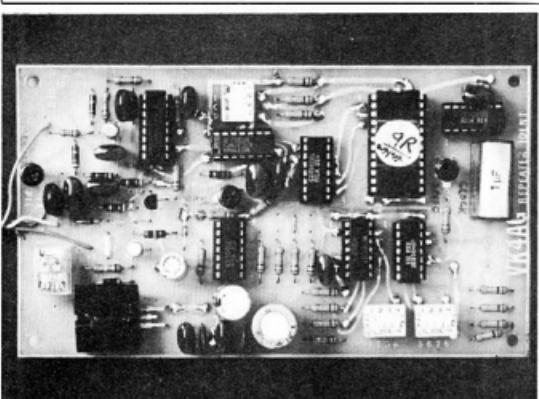
Circuit Diagram.



VK4AG REPEATER IDENT



VK4AG = 81



The Finished Board.

The first version of this board was completed and tested by April 1981. Soon after DOC agreed to the issue of licences for portable repeaters. With the new licence and the complete control box, the VK4RWI repeater was immediately available for testing, and was put into successful operation in a WICEN exercise in early May 1981. (See RALLYING AND WICEN, July 1984 AR).

Apart from the portable WICEN repeaters several ident boards have been made and these are operational in two of the repeaters in Brisbane, two in Gympie, and at Roma, Mount Isa, and Weipa. Other repeaters proposed for Townsville and Terranora Lakes also intend to use the board.

The PCB is double sided and where connections are necessary to the top tracks at an IC. This is done indirectly by a link through the board to the appropriate leg underneath.

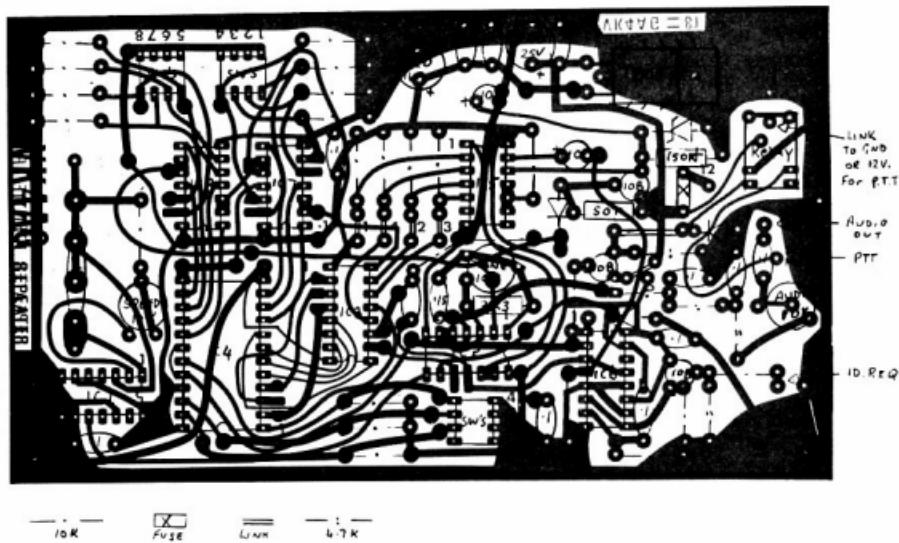
All resistors should be fitted first as some (about 10), are used as links from the top of the board to the bottom. In addition, there are about 50 other links through the board.

The circuit diagram and printed circuit board layout provided with this article should enable anyone to duplicate the ident board, but if there are any problems encountered, Geoff VK4AG, QTHR will be only too happy to assist.

Thanks to George McLucas VK4AMG, for the basic idea for this board and Phil Steen VK4APA for programming the EPROM.

AR

Did you know . . . Fosters Lager became available to the public in 1889, after Mr W M Foster began brewing beer in Collingwood, Vic, in 1888.



UNDERSTANDING THE SPECTRUM ANALYSER

The March issue of ETI looks at spectrum analysers in general and the Anritsu MS610A in particular. Once the exclusive tool of rf gurus, the spectrum analyser is finding its way out of the closet and on to the bench top.



**ALSO IN MARCH
ELECTRONICS TODAY**

- ★ Looking for clearer frequencies for shortwave broadcasts
 - ★ The 8 mm video recorder is a CD quality audio recorder
 - ★ Philips PM3360, micros analyse waveforms
 - ★ Starting electronics — fault finding
 - ★ Teaching the electronic brain with microprocessor development systems
 - ★ Results from comet Giacobini-Zinner rendezvous

eti

REJUVENATE YOUR MOSLEY TA33

This three element tri-band Yagi antenna was one of the first commercial beams to appear on the amateur radio scene in this country, during the 1960s. Like most tribanders, it is a compromise and sometimes poses a few problems with tuning in order to obtain reasonable SWRs on each of the three bands.

Ted Gabriel VK4YG
PO Box 245, Ravenshoe, Qld. 4872

If you have one, or have recently obtained an old Mosley TA33, don't despair because with the modifications outlined in this article it will operate satisfactorily.

Firstly, if the antenna is an old one, it is recommended that the trap sections be completely overhauled for the following reasons: Due to industrial fumes, salt laden sea breezes or tropical humidity, any tri-band antenna's performance will fall-off, due to corrosive effects within the traps.

Open the traps by carefully removing the plastic end covers, and separating the metal coil cover and the coil.

The coil is aluminium wire on a plastic former and connected electrically to the element tubes by steel PK screws, which will probably be rusted and corroded. It will therefore be necessary to replace the screws with new ones and whilst out shopping for these procure a tube of 'Penetrox A' or 'Aluminox' from an electrical supply house.

This material is a grease used in high voltage electrical cable jointing, and should be used where two dissimilar metals are likely to cause electrolysis and corrosion.

Clean the aluminium wire ends and element tubes, where they telescope, with steel wool or fine emery cloth and apply jointing grease before re-assemble.

If the plastic trap covers crack or crumble during disassembling, replace them with a suitable tape such as duct tape or other sealing compounds, but make sure they are non-metallic.

Take care to assemble the trap cover with the drain holes facing down, and ensure they are not blocked.

When triband beams came on the market, they were facetiously referred to as 'rotary perches', and indeed there can be trouble if the screws holding the inner ends of the driven element halves into the insulating blocks snap or pull out under the combined weight of large birds. The straw-necked ibis, a migratory bird from Siberia, is fairly large and visits Queensland during the summer months. It delights in landing on clear branches and beam antennas, so that it has an easy take-off.

To combat this problem it is advised to investigate the fitting of stronger screws, and also fit screws into the boom, just under the adaptor block of each element to prevent pivoting of the elements around the boom.

However, the writer has found there is one species of feathered friend, namely the mudlark or peewit, that if they build their nest plaster nest on the boom without de-tuning it, it is better to leave them there! These particular species will not let any other bird, however large, anywhere near their nest, or your beam, for that matter. They even attack hawks with the ferocity of a pair of 'spifires' attacking a squadron of bombers!

The problem of satisfactory tuning for all bands is overcome by the use of gamma matching sections. (See photograph for gamma matching). This system is used because it enables each band to be tuned separately.

The gamma match consists of two lengths of aluminium tubing, telescoping to form a tubular condenser and insulated from each other by plastic tubing, or other material, in the form of a sleeve. (See Figure 1 and Table 1 for dimensions).

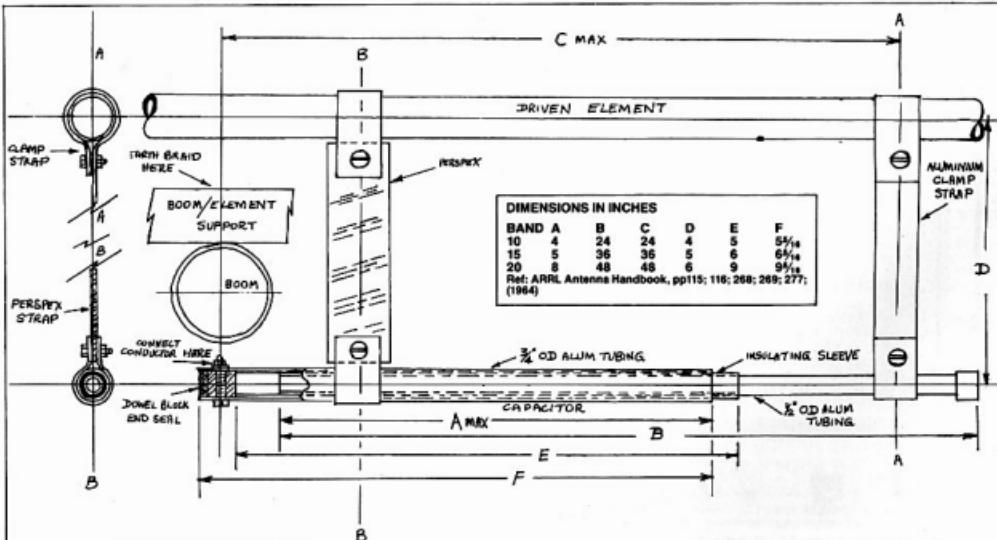
The driven element (DE) halves are joined together at the centre by a piece of copper wire and the exact centre of the DE is earthed to the base plate of an SO239 coaxial fitting, mounted on a plate attached to the DE support.

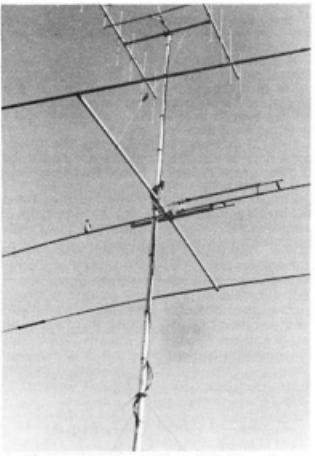
From the centre of the SO239 a copper wire is run to the end of each of the gamma match sections, which are disposed radially around one side of the driven element. Note that the 'hot' ends of the match sections are insulated from the element by perspex plates, whilst at the adjustment end, an aluminium clamp strap is fitted.

Don't be surprised when you start to tune the match sections if you find that the resonant frequency has moved up out of the top end of the band — this is corrected by fitting some pieces of $\frac{3}{16}$ " (9.5mm), TV element tubing into each end of the DE so as to lengthen it by upwards of 150mm.

Tuning can be carried out with the beam pointing upwards and resting on its reflector, or at a reasonable height, above ground.

Use a noise bridge, if one is available, or an SWR meter. Adjustment of the director and reflector must also be made and intermediate tuning screw holes can be drilled between those already provided, but measure them to be the same each side.





Mosley TA33 with Gamma Match tuning — complete with a colourful lorikeet.

Tuning of the gamma match sections is accomplished by adjusting the two dimensions, A and C, with reference to Table 1, the capacitance of the tubular condenser is approximately 15pF per inch (25mm), of engaged tubing.

When the best SWR has been obtained at the desired resonant frequency, carefully seal all ends and joints of the tubing. Do not use cheap, imported plastic tape as this will rapidly deteriorate in the sun and tends to lose its adhesive qualities. Even good quality tapes may need to be thread secured.

Remember to seal all UHF coaxial fittings as they are not waterproof.

Do not use jointing grease in the tubular condenser section of the gamma match, but use it on the end clamping strap.

If the element tubing, or the boom, show signs of surface corrosion, it is advisable to clean them thoroughly with steel wool, or fine emery cloth, and apply some coats of clear varnish.

The writers' Mosley TA33 is over 20 years old and with these modifications and regular maintenance, still gives a very good performance on all bands.

AR

1985 WINNER OF THE RON WILKINSON ACHIEVEMENT AWARD see page 3.



VK3UM

IT GREW LIKE TOPSY

Allan Stephenson VK2PT

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As a boy I had been bird-nesting, catching crawchies, hunting in the ti-tree scrub with my Daisy air-gun (no bee-bees) and blunt pocket knife, played football and cricket on any spare allotment, and marbles in the middle of our suburban street. I had now reached that all important stage in a boy's life when I had to decide to write my first story. Only three pages on, and a well meaning friend introduced me to his crystal set! It was the most interesting thing I had ever seen, and while having no idea how it could be done, resolved that I would make one.

NOTHING WORKS THE FIRST TIME

My parents were not impressed by my ambitions, my Dad was not into such things but gave me enough money to buy, secondhand, one pair of earphones, a variable condenser, and a crystal. Mother applied the baking powder container prematurely (the cardboard coil former) and an old fruit case from under the house provided the timber for a cabinet. A coat of varnish to keep the dampness out, and a little work with the aid of an old soldering iron heated on the gas ring and ultimately came testing time.

Now how was I to know that nothing works the first time, he learned something the hard way which was to be repeated so often in the years to come. The trick, of course, was to find a good spot on the crystal with the tip of the cat's whisker and bingo!

MORE MONEY FORTHCOMING WHEN IT WORKED

It would not be easy for me to describe the reaction exhibited by my parents and myself following this amazing break-through. Sufficient to say that an additional five shillings was forthcoming for the purchase of another set of earphones to be shared by two in the family, while the third person had a complete set.

The Great Depression was making its presence felt at this time and people were giving things to one another as almost every day occurrence, which is how I came by a good cabinet with a Bakelite front panel and wooden baseboards. Included was a few ceramic varistor resistors with lead ends, some capacitors, and three battery type valves. The circuit diagram was a bit of a mystery, but putting it together was a "piece of cake" as all the connections were made with terminals. The Reinartz coil used some more round food package "line" from the kitchen. Two 1.5 volt "telephone" batteries were the 'X' supply, and one 45 volts 'B' battery was the HT.

A potentiometer in the 'A' supply to the valve filaments was the volume control.

UNTOLD JOY UNTIL ELECTRIC MANTLE RADIO ARRIVES

This very humble beginning brought untold joy to our home bringing news, sport (the cricket tests), Charley Lawrence and his community singing (a modern innovation), Jim Davidson and his ABC Dance Band, to mention a few highlights, with a special bonus for me as the builder.

Soon after the beginning of my apprenticeship to the electrical trade, my parents purchased an "all electric" mantle radio. That part of the industry was starting to boom and radio looked as though it was here to stay.

The arrival of this new device put an end to the practical side of my radio activities for the time being. I kept the crystal set in my bedroom for many years and enjoyed the evening programs after technical school until the 11pm closing-down time.

After marriage, building a new home and virtually "settling-down" I found time to get out the ARRL Handbook. At this stage I knew very little about amateurs and their activities, but had built a number of single band receivers and had done a little listening.

An article in the local newspaper led to my meeting my first amateur on what was to be my lucky day. He gave me all the advice and information I needed at the time to get started.

GETTING INTO AMATEUR RADIO

With difficulty I was able to buy three Morse training records (78s) and by adjusting the governor on an old hand wound turntable, was able to get up to 18WPM. I had, by now, met another amateur who lived close by and he was most helpful in providing a variation in practice, from the "groups of five" on the records. Requirement at that time was 14WPM.

The issue of the "Experimental Licence" and a call sign on 2nd June 1948, was a day to remember, as I am sure it must be to most aspirants.

By now, I had accumulated enough receipts of type components, together with some disposals of junk of great value, and I was well on the way with the new transmitter.

It was to be home-built, of course, as there was no choice, and I had already decided on a single 807 in the final to be driven by a 6V6G crystal oscillator on the 40 metre band, and modulated by a pair of 807s. The antenna, after a little "try it and see" was a half-wave end fed Zapp, fed with home-made 600 ohm line with five inch Bakelite spacers. The modulation transformer was a receiver power transformer, until I was able to wind a more permanent one, and for a start the microphone was a carbon insert with the traditional wooden match connection at the rear, into a speaker transformer in reverse.

Metering was provided with milliammeters from disposal sources, with added multipliers or shunts as required. This provided up to 30 watts of plate and screen modulation AM.

Receivers were a bit of a headache, but in the meantime, I had bought a BC-312 receiver, ex US Signal Corps.

OUT OF THE CUPBOARD, INTO THE ROOM

As can be imagined, by this time I had moved out of the cupboard in the whole of the spare room and had taken over the spare room and was to an "all systems go" situation and enjoying myself immensely.

With this type of equipment, experimentation was a keyword and I spent much time doing just that. Modification of circuitry, making bits and pieces, and construction of test gear to check and adjust modifications made the hobby more than a pestilence. Being crystal locked soon rated high in the unpopularity stakes. Fortunately, at that time, the Clapp Oscillator was being advertised as a simple VFO. I built a rough one for a try-out. Frequently, this has been the wrong thing to do, but on this occasion there was both good and bad. The good was that on testing it worked reasonably well with just a little drift, which was encouraging. The bad was the house had to be held steady whilst transmitting. When any of the family banged the "fly-door" the thin, but comparatively large area tuning condenser plates would vibrate, which didn't do anything for the carrier. The second version was a great improvement with ceramic insulation where possible, a change of condenser, a vernier dial (from disposals) with a bandspread of about nine inches, a pentode oscillator followed by an isolating stage, and no crystal.

With a thirst for DX, and with limited space, the antenna was replaced with a two element wire feed beam which was fed by the 600 ohm line and Delta matched. It was unavoidably directed to the NW, which provided me with a bonanza of memorable QSOs.

Everything was getting bigger! The transmitter, it seemed, would ultimately engulf us, the junk box did, and book and magazine storage was becoming a problem.

Late in 1950, two metres, with a pair of 7193s in a unity-coupled oscillator and a modified ex radar receiver proved a little disappointing until several of the "boys" built three over three beam antennas and we were able to work all around the suburbs. However, a change in work, and the arrival of television meant banishment from amateur radio.

OUT OF RADIO FOR A TIME

Being more settled now, receiverless, transmitterless and almost junk boxless, I decided to build a receiver to see what was happening. In the middle of this construction I encountered one of my old amateur mates who told of how things had changed and advised me to call on yet another amateur who had recently bought some gear. And so I saw my first *Black Box* — a convincing winner.

My first transceiver was a FT-200, then came an SWR meter. With a half-wave dipole on 80 metres fed with 300 ohm ladder type TV feeder and a simple tuner and I was in business. How simple it was.

Still enjoying building, I built a Z-match tuner which is still used today and has matched several transceivers to a variety of antennas over a period, including the 80 metre dipole still in use at all HF bands, two triband quads fed with 70 ohm twin and a commercial triband beam with the same type of feed. The transceivers didn't worry because they did not, at any time, see worse than 1:2 SWR on 80, 40, 20, 15, and 10.

A COMPUTER IS SOMETHING ELSE

Now the computer is something else and I may have left it a little late. Nothing to build or probe with a meter, no mods or adjustments, but lots to

learn and think about. It has certainly been invaluable in the preparation of this article which has been my first experience with the wordprocessor.

Much has been said, and will continue to be said about the many facets of amateur radio. While many have passed through to full time employment there will always be those who have no further wish than to participate at the hobby level, but for all there is ample scope.

I will say that many of my contemporaries have at some time needed the friendship and assistance of other amateurs, and for myself offer a big thank you to those who came to my aid. I am sure that the future holds much promise for amateurs who will continue to be represented in the forefront of advancement in electronics and particularly communications.

AR

THE RESONANT RHOMBIC

Joe Ellis VK4AGL

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The Rhombic antenna is the ultimate in simple wire arrays, where maximum gain is required in a given direction. Many radio amateurs have aspired to a Rhombic, only to be deterred by space considerations. To be effective, this antenna needs to be big.

My interest goes back to World War Two, during the closing phase of which I was associated with the US Signal Corps. The military manuals of the day described the Rhombic in great detail and encouraged the "troops" to utilise this type of antenna, even though the conditions for its erection might not be ideal.

Forty years after WWII ended, Bill Owen, of the University of Pennsylvania, sent me a copy of a 1942 publication, after learning of my plans to erect a large wire array.

The requirements for a Rhombic are simple, some poles, lots of wire, and a good antenna tuner.

POLES

There may have been a time when a radio enthusiast could have "won" a few poles from the local power company, or council, but those days are long gone, as I soon discovered. It took six months to find an honest timber-cutter who was prepared to cut down, and deliver, the necessary trees for QRP dollars. I selected some Iron Banks, which were growing on the side of Mount Buderim, not far from my QTH. For any conservationists who may be getting excited at this stage, may I say this was only the second time in Australian history that the sound of an axe had rung out in this particular forest, and cutting is essential for proper growth and timber production.

When cleared up, the poles were a little over 50 feet (15m) in length and were allowed to dry out for some weeks. They were then painted with preservative, fitted with climbing pegs and capped with aluminium hats. Erection of the poles was done by a commercial contractor. It is not a job for an amateur due to the large weights involved. I stuck to this theory, even though there was no shortage of volunteers from my local radio club.

Anyone who has put up a long length of wire will have gone through the problem of sag. Fortunately I had access to disposal wire consisting of a strong steel cable, with two copper wires moulded alongside. Telecom call it drop wire. Properly tensioned, this wire stays magnificently taut and a joy to behold. Only the copper wires joined together were attached to the feed line.

Each side of the antenna is 329 feet (100m) long and is run in one length via insulated pulleys mid-way.

The wires were tensioned and attached by galvanised chain and turnbuckles of robust



General view of the antenna.

proportions. Prior to the erection of the poles, there had to be a decision on which frequency was to be primary, and after a lot of information from many sources I chose a compromise apex angle, suitable for 10 and 15 metres, the 1973 Dipole and Long Wire Handbook by Ed Noll W3FQJ, an excellent reference publication. A further decision had to be made as to a suitable target for the array and, after a look at a Great Circle Map centred on Brisbane, I chose the city of Los Angeles, which gave me an extended line to New York. The reverse bearing goes across the Indian Ocean to South Africa. It was a simple matter to establish the bearing by reference to the 10 metre beacon maintained by W6IIRT, from a Hollywood QTH. The beacon runs seven watts and I have used it for years. At the moment it runs practice CW at 13WPM, sending in mixed groups, which is good practice for those interested in learning the code. I aimed my Rhombic down this path.

Having chosen the target, I found I was a little short of real estate and had to open diplomatic relations with my neighbour, a widow known to have a "peppery" temperament. I guaranteed no interference to

her television reception, but she was more concerned about her horses. I received conditional approval to erect a pole on her farm as long as I did not frighten them. Simple trigonometry was used as an aid in locating the poles and determining space requirements. The actual antenna in use here covers an area of 300 feet (91m) long by 140 feet (42m) wide. Ideally, the location should be level and away from buildings. As with any antenna, it also needs to be away from the ground for maximum performance. Having said that, my Rhombic is near and over the tops of trees, the ground is not level, and the height, at average, 45 feet (13.5m) is too low. Nevertheless, it works superbly.

ANGLES

Referring to Figure 1, note that the two angles are marked, TILT and APEX. Either can be used in the design of a Rhombic; the other parameters are leg-length and height above ground. The total length of wire in the array is made an odd multiple of an electrical quarter wavelength. The whole object is to combine the major lobes of radiation so that the antenna

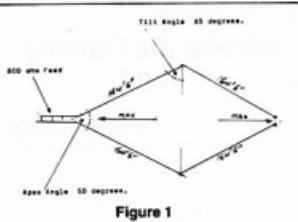


Figure 1

radiates and receives at the angles which normally are most effective for communication on the frequency to be used. Amateurs are usually attempting to achieve wave-angles of 0 to 20 degrees above the horizon. It is not within the scope of this article, nor am I competent to explore fully, Rhombic design. However, Figure 2, which is a wartime chart is included for interest.

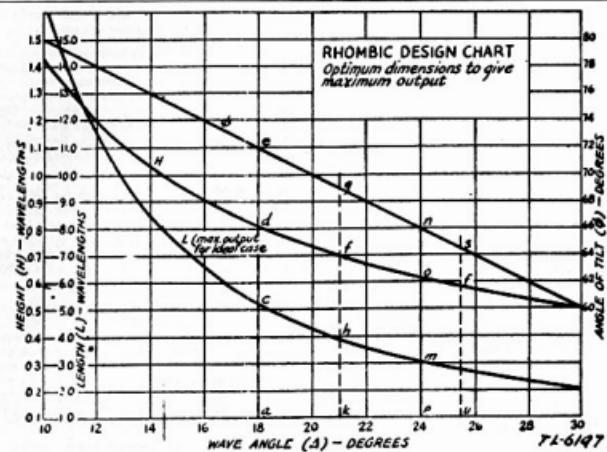
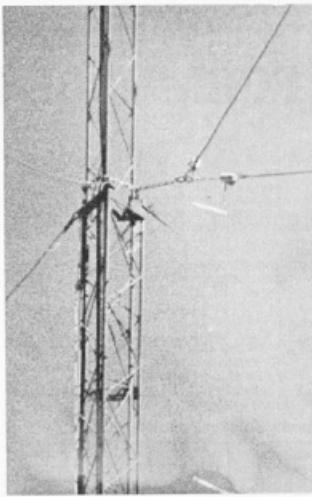


Figure 2 — Rhombic Antenna Design Chart for Maximum output design. The top curve is tilt angle, middle curve, height above ground and the bottom curve is leg length. For example: If you require a wave angle above the horizon of 18 degrees, draw a vertical line through point a (18 degrees on the wave angle abscissa). The answer would be — leg length 5.25 wave lengths, height 0.81 wave lengths, and tilt angle 72 degrees.

Usually a Rhombic is fed via 600 ohm open wire transmission line. Spacing wire of gauge 14 to 20 at five inches (127mm) will achieve a characteristic impedance within the range of 600-700 ohms. Spreaders were made of perspex obtained as scrap from a signwriting company. It is beastly material to cut into strips; I found sharp electric saw necessary. Open wire feedline is the most efficient method of transfer of RF to an antenna, and has a velocity factor of unity. It may be necessary to alter the length of the feedline to minimise RF feedback in the wireless room. While on this subject, I found it necessary to tidy up most of the leads in the shack. Wires to extension speakers, and ALC, plus relay lines to linear amplifiers were

either shortened or shielded. Remember, this antenna is capable of being operated on 160 metres through to 29MHz, and you will be lucky not to strike this trouble on at least one frequency. The antenna became operational during January 1984 and the first impressions were of incredibly quiet reception and reports from overseas amateurs indicated the station sounded better on the Rhombic. Subsequent reports show a gain of one to one and a half S points on 10 and 15 metres, and even on 20 metres, when compared with a TH6, which is no slouch on these bands. These are average observations, on many occasions the wire antenna is much better than the Yagi, in no uncertain terms. But it is in the noise-free reception that it becomes a winner.

Since the resonant Rhombic is claimed to be bi-directional, with maximum lobes in a line bisecting the apex angle, I looked forward to interesting results in the reverse direction. I duly came up on the ANZA net and was shattered to find results were terrible, with the Yagi way out in front. Baffled, bothered and bewildered, I shot off an air mail letter to W6AM



Close view of the Rhombic Feed Line.

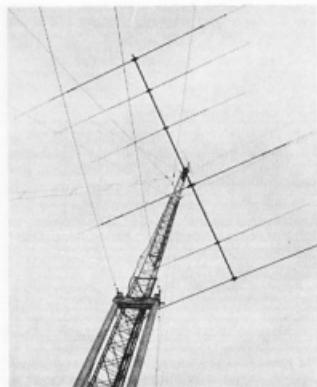
explaining my tale of woe. Don Wallace ran a stable of 13 Rhombics and had kindly lent me much data, collected by him over a long lifetime. His reply was — "The books say a Rhombic is bi-directional. You and I have found otherwise. It is bi-directional only if there is a feed line on both ends. The far end is then terminated in the station, via relays. It is then capable of awesome front to back ratios, measured at 56dB here". It is sad to relate, Don became a silent key as I was putting this article together.

TUNER

I mentioned the need for an efficient antenna tuner. The 'Transmatch' has been around for many years, with the original circuit being published in QST. I used one until W1FB advised me of a variation on the original, called the SPC. It uses the same components but covers a much wider frequency range. It has a much better harmonic attenuation than the transmatch. In order to make it include the 29MHz FM frequencies, I found it necessary to pay more attention to layout and use copper strip, rather than wire, to connect the bits and pieces together. The balun was made from cores which are regularly advertised in Amateur Radio. These items come complete with excellent directions. The SPC circuit is featured in late issues of the ARRL Handbook.

In the 18 months that my antenna has been in operation, it has been used on all amateur frequencies. It was used on 22nd June, when the 12 metre band was opened for American amateurs, and excellent reports were received. It appears to be reasonably directive on 30 metres towards the United States, and is also used on 40 metres, in that direction, with good results.

If I could discover how to turn the farm around, I would dispense with Yagis. Since I don't ever anticipate being able to do this, I can only express my gratitude to Professor Yagi and his friend, Mr Uda, for their compact invention. 'Project Rhombic' would never have 'got off the ground' without the encouragement and practical help of Roy VK4ARU, who was a tower of strength throughout the construction phase.



Rhombic Feed with the TH6 Reference Antenna above.

WHERE DO MAGIC FORMULAE COME FROM?

Bruce Devenish VK1BUB
3 Lambert Street, Lyneham, ACT. 2602

Whilst browsing through an old Radio Engineers reference book¹ I came across the following formula:

$$\frac{P_m}{P} = \frac{(S + 1)^2}{4S}$$

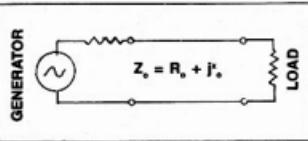
where

P_m = power that would be delivered if the system were matched

P = power delivered to the load

S = standing wave ratio of mis-matched impedance referred to as Z_0

and the following diagram



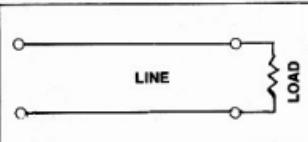
I wondered where this formula came from so I decided to experiment a little and see if it could be derived.

I began with the following definitions:

Standing Wave Ratio (S): The ratio of the maximum voltage to the minimum voltage along a transmission line.

Reflection Coefficient (ρ): The fraction of voltage reflected back at the mis-match.

So we have a line and a load.



Let V_m be the voltage seen at the load if there is a perfect match.

Then maximum voltage along the line, when there is not a perfect match is equal to:

$$V_m + \rho V_m$$

and the minimum is equal to:

$$V_m - \rho V_m$$

So returning to the definition of SWR — this is definition A

maximum voltage

$\therefore S = \frac{\text{maximum voltage}}{\text{minimum voltage}}$

$$= \frac{V_m + \rho V_m}{V_m - \rho V_m}$$

$$= \frac{V_m(1 + \rho)}{V_m(1 - \rho)}$$

$$= \frac{1 + \rho}{1 - \rho}$$

$$= \frac{1 + \rho}{\rho}$$

Now let us think about power. Maximum possible power into the load

$$P_m = V_m^2 / R$$

Now, if ρV_m is reflected back, the lost power is

$$\rho^2 V_m^2 / R$$

∴ Power delivered to the load:

P = maximum possible power — reflected power

$$= \frac{V_m^2}{R} - \frac{\rho^2 V_m^2}{R}$$

$$= \frac{V_m^2}{R} \times \frac{(1 - \rho^2)}{1}$$

Combining these two formulas to the form required gives definition B:

$$\frac{P_m}{P} = \frac{V_m^2 \times R}{P \cdot R - V_m^2 (1 - \rho^2)}$$

$$= 1 / 1 - \rho^2$$

Now from equation A:

$$S = \frac{1 + \rho}{1 - \rho}$$

$$S(1 - \rho) = 1 + \rho$$

$$S - S\rho = 1 + \rho$$

$$S - 1 = S\rho + \rho$$

$$S - 1 = \rho(S + 1)$$

$$\therefore \rho = S - 1 / S + 1$$

Substituting for ρ in B we get:

$$\frac{P_m}{P} = \frac{1}{1 - (S - 1 / S + 1)^2}$$

multiplying the top and bottom line by $(S + 1)^2$ gives:

$$= \frac{(S + 1)^2}{(S + 1)^2 - (S - 1)^2}$$

$$= \frac{(S + 1)^2}{S^2 + 2S + 1 - (S^2 - 2S + 1)}$$

$$= \frac{(S + 1)^2}{2S + 1 - S^2 + 2S - 1}$$

$$= \frac{(S + 1)^2}{4S}$$

Which is the magic formula.

It can be seen that if $S = 1$ then $P_m = P$; ie the power into the load is the maximum possible. As S increases, the power into the load decreases.

This is all very interesting. I wonder how well it represents the real situation. The only way to find that out is to conduct an experiment. That must do, sometime!

REFERENCES:

¹ Reference Data for Engineers — Fourth Edition, International Telephone and Telegraph Corporation.

Bill and the Dummy Load

Ted Holmes VK3DEH
20 Edmonds Street, Parkdale, Vic. 3195

Bill Blitheringwit was in a spot of trouble. Nothing very serious, but he considered he should do something about it. He had broken his dummy load. It was a stupid thing to do, he admitted. He had trodden on it. For his dummy load had been an electric globe. And it didn't look very likely he would be able to get another like it. The original had been from a railway carriage. These days the wretched trains were fitted with those irritating fluorescent tubes — quite unsuitable.

He fossicked away in a heap of old magazines stacked in a corner and found an article written around 1942. This was it. A perfect design for a dummy load! All he needed were a few old resistors and a box to put them in, plus a couple of PL 259 connectors. It looked like a piece of cake.

Humming unmelodiously to himself, Bill wandered out to his garage. A slight altercation ensued with a somewhat stiff door, resulting in some bent hinges, but Bill gained access to his Aladdin's cave. There he happily rummaged through his collection, like a scientist exploring an archaeological site. Finally he found a small box, PL 259 connectors (which needed a bit of de-soldering) and an assortment of resistors. Now he was in business.

He returned to his shack with his treasures. Somehow or other he had to get 50 ohms out of those resistors and also find a way of putting them in parallel. There was a formula... He sat down with pencil and paper and the end result was a large collection of different size and value resistors, all to be assembled in parallel.

Out came the soldering iron and Bill happily joined the handful of resistors into a bundle and twisted the leads at each end together. He finished up with a strange-looking maze. This looked fine. He heated up his iron and began to pour solder on one end of the bundle, making sure that plenty ran all through the network of leads. The collection grew very hot and he had to wait a while for it to cool down before he did the same with the other end. Fine business!

So far so good. As a concession to the article in the magazine, he thought he'd better test the resistance on a meter before putting the thing in a box. He applied the prongs of his meter. What? Three Kilohms! Can't be right. He got the same reading every time. Better snap a few resistors off. Bill did this several times and each time the reading got higher.

Finally he finished up with one solitary resistor and that fell apart in his hand as he was looking at it.

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If possible please include your recent magazine address label.

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Did you know... Young, in NSW, was the first town in Australia to introduce electricity as a complete town-lighting system, in 1888.

TROPOSPHERIC SCATTER PROPAGATION

Ian Roberts ZS6BTE

INTRODUCTION

During the last 20 years or so, with the appearance of high power UHF amplifiers and low noise signal amplifying devices, a wide-band propagation mode capable of conveying VHF signals over distances of 800 km or more has become increasingly important in high priority commercial and military links.

The mode is loosely referred to in the industry as "tropo" or "tropo scatter".

In recent years we have recorded interesting long distance VHF and UHF phenomena as noted by radio amateurs. It is evident though, that many of the reports are rendered "tongue in cheek", without much understanding of the propagation phenomenon involved and it is commonplace to see EME, sporadic E, F1, F2, EIRP, scatter, tropospheric ducting and tropospheric scatter confused. The first five modes depend entirely upon solar radiation of the upper ionospheric layers for success, the latter two have nothing to do with solar activity. Tropospheric ducting is a "freak" occurrence involving inversions or peculiarities in the moisture content, pressure, and temperature domains of the atmosphere in the vicinity of the ground and hence may be detected by antenna systems. The mode is obviously unpredictable. Accordingly, with solar activity presently at a low level, the only long distance mode left for the VHF enthusiast is tropo scatter. Radio amateurs, with their unique talents, and privileges, are in a particularly good position to add greatly to the existing knowledge of tropo scatter.

BACKGROUND AND HISTORY OF TROPO SCATTER

Marconi described tests in 1933 at 550 MHz over a 270 km path between Rocca di Papa, Rome and Cape Figari, Sardinia.

In 1949 the USA froze the issuing of television broadcast station licences because of propagation beyond anticipated boundaries and co-channel interference on a massive and unexpected scale.

By 1952 Bell Telephone Laboratories, primed by much theoretical speculation and increasing empirical evidence, put forth their "PoleVault" VHF over the horizon communications system.

The US Air Force, in about 1955, took the plunge and commissioned a link over hostile territory, thereby obviating the need for numerous conventional line-of-sight links.

And that's where the mysteries of tropo scatter propagation have been largely hidden, in classified government documents available to the radio amateur. Additionally the precise methodology of tropo scatter remains ill-understood even in professional circles and most performance evaluations are based on empirical data collected during field testing.

CONCEPTS AND PARAMETERS

Various important parameters, peculiar to the mode, need further examination. The K-factor, generally K4/3 radius of the earth. Much as light passing through a prism refracts towards the denser medium so a VHF beam passing along the surface of the earth tends to refract along the denser air at the surface to achieve a distance considerably more than the true line-of-sight condition. This accounts for the fact that radar, operating for example at L-band (1100 MHz) can "see" a target below the visible horizon (which is itself below the physical horizon) Fig 1.

Typically K is described as K4/3 at frequencies below about 1 GHz, meaning over the horizon propagation but under severe conditions may fall to below unity.

Generally, $K = \frac{4}{3} \frac{R_e}{R}$
true earth radius

and is greatly dependent on the surface refractivity index of the terrain over which the VHF beam is

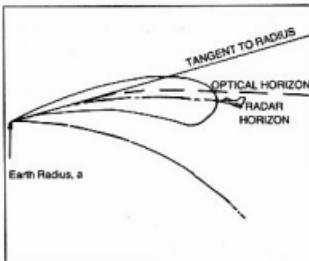


Fig 1: Bending of antenna beam due to refraction (True earth radius, a)

passing. In South Africa a ballpark value for this variable would be 280. The VHF-UHF Manual (RSGB) has an interesting description of this refractivity index and derivation.

There is a non-correlation
1) in the signals received by two adjacent antennas from a dual polarisation transmitting site when the receiving antennas have opposite polarisation eg: horizontal/vertical, Fig 2.

2) in the signals received (same polarisation) by two antennas spaced a finite distance apart, eg: 100 wavelengths, Fig 2.

3) in the signals received (same polarisation) by two antennas receiving signals widely separated in frequency, eg: 10 MHz, Fig 2.

4) in the signals received by two antennas with slightly different beam headings, Fig 2.

These characteristics are put to good use in professional systems. For example, a tropo link with "quadriversity" would consist with a primary link 1) d, 2) d, 3) d capable of receiving both horizontal and vertical polarisation on each of two antennas spaced apart as above. Each antenna, similarly, would transmit horizontal or vertical polarisation on a common frequency. FM is currently the preferred mode. The various signals are combined at IF (precise detection combination diversity). Since the respective noise inputs add in random fashion and the signals linearly, a higher signal to noise ratio is obtained. Typical signal to noise ratios (with psophometric weighting) are plus 40 dB — good enough for a good

quality telephone line or medium speed data with error correction.

A representative tropo link uses quad diversity, 10 kW CW at 900 MHz, carries 132 FDM telephone channels, distance 500 km. A link of this nature would otherwise require 10-15 line-of-sight microwave stations.

GEOMETRY OF TROPO SCATTER PATH

R is 4/3 earth radius (8448 km)

d is great circle path distance

h_1 and h_2 , respective antenna heights above sea level

h^1 and h^2 , height of radio horizons above sea level

d₁ and d₂, great circle distance between radio horizons and respective antennas.

The scatter angle $\Theta = \Theta_0 - \Theta_1 - \Theta_2$ radians where Θ_0

$$= dR$$
$$\Theta_1 = \frac{h_1 - h^1 + d_1}{d_1} \cdot \frac{2R}{2R}$$

$$\Theta_2 = \frac{h_2 - h^2 + d_2}{d_2} \cdot \frac{2R}{2R}$$

Typical scatter angles are up to 4 degrees. Each 1 degree increase in scatter angle introduces an additional 10 dB path loss. At high elevation scatter angles are avoided in professional systems. This is easier said than done as one can choose a mountain top site.

In Fig 3 the zone where the beams intersect is called the scatter volume and the properties of this volume define the quality of the scatter path.

AMATEUR APPLICATION OF TROPO SCATTER

Inspection of a standard 4/3k path profile indicates that one may not expect a local radio horizon (d, and d₂) of more than 30km assuming 20m antenna height and level ground.

Under these conditions could one expect a tropo scatter path to exist between Johannesburg and Port Elizabeth on 50 MHz using typical amateur radio gear?

In order to address this question it is necessary to calculate or estimate the following:

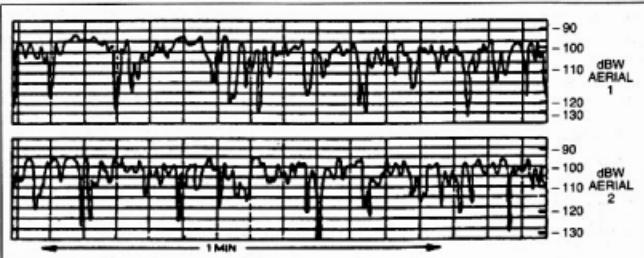


Fig 2: Non-correlation between the signals received by two antennas with 1) opposite polarisation 2) physical separation of 100 wavelengths 3) slightly wide frequency separation.

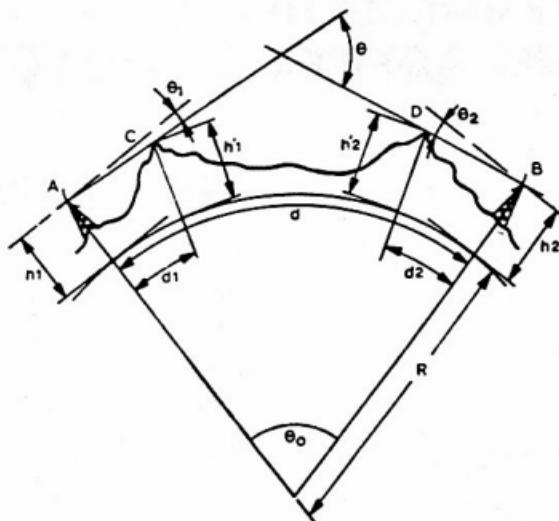


Fig 3: Geometry of Tropospheric Scatter Path

- a) distance
- b) scatter angle
- c) path loss
- d) system noise temperature
- e) signal to noise ratio, which would give an indication of the signal to be expected.

a) The distance between Johannesburg and PE is calculated from the great circle path distance equation by assuming JHB to be the point of departure and using the respective latitudes and longitudes.

So $d = 872 \text{ km}$

b) Scatter angle

The take-off from the PE end is particularly advantageous with the beam passing over the Sundays River valley and establishing a radio horizon in the Patterson area at about 60km. So, retaining the nominal 30km radio horizon at 20m antenna height in JHB and remembering to use the same units in the equation: $h = \text{height} / \text{distance}$ gives $h = 2\text{km}$ with horizon at 1.83 km (hills south of Alberton)

h_s in PE at 0.5 km with horizon at 0.48 km (60km out).

then scatter angle

$$872 - (2.0 \cdot 1.38 + 30) - (0.5 \cdot 0.48 + 60) = 8448 \quad 30 \quad 16896 \quad 60 \quad 16896$$

$$= 0.0769 \text{ rad.}$$

$$\theta = 4.4 \text{ deg}$$

c) Path Loss

The medium path loss L_m consists of three components, viz.

$$L_m = L_n + L_s - 0.2(N_s - 310)\text{dB}$$

where L_n is the free space path loss

$$L_n = 29.4 + 20 \log d + 20 \log f \text{ dB}$$

where $d = \text{distance in km}$

$f = \text{frequency in GHz}$

$$\text{ie } L_n = 125.18\text{dB}$$

and L_s is the all year median scatter loss normalised at a surface refractivity index

$$N_s = 310$$

$$\alpha = 0.8$$

$$T_s = 290\text{K}$$

$$T_r = 290\text{K}$$

$$T_i = 150\text{K}$$

$$T_m = 600\text{K}$$

$$g_{m1} = 32 (15\text{dB})$$

The terms were explained in reference 3) $T_m = 460\text{K}$

The receiver noise power ratio P_r consists of the "pure" FKB noise modified to incorporate the receiver noise figure in F_{KB} where F is the receiver's noise figure. If one assumes the receiver's RF stages to be T_r and T_i with filter losses of 1 dB then P_r is about 2 dB. In a bandwidth of 1000 Hz P_r turns out to be -168dBW

e) Signal to noise ratio

$$\text{SNR} = P_r + G_r + G_t - L_s - P_s - P_n (\text{see ref 3)}$$

using 100W PEP into 12 dBd antennas $\text{SNR} = 1.14 \text{ dB}$

However, since an isotropic path loss was used about 5 dB should be added to this. The ear should have no trouble tracking a beacon-like signal at this sort of SNR, indeed it should be continually audible with signal levels changing in sympathy with changes in the surface refractivity index.

For example an increase in this quantity from 280 to 300 would reduce the path loss by 4 dB and increase the SNR accordingly.

GENERAL

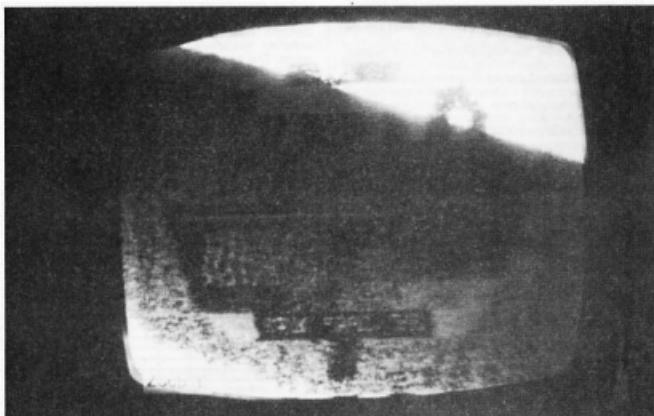
As a matter of interest the typical heights of the scatter volume (assuming un-obstructed paths) are listed below:

distance	150km	200-2000m
	300km	600-3000m
	600km	3000-20,000m

The shorter paths are characterised by deep, fast fading. Long hops show a steadier path loss consistent with the median path loss for that month. It is suggested (in classified literature) that the best tropo conditions prevail during a hot summer afternoon, while the worst conditions occur during winter nights.

Much remains to be researched, or remains unreported. For example, what is the effect of a thunderstorm on the scatter volume? What happens when a tropospheric duct intercedes? Is the north/south path more favourably propagated as F/T/TEP propagation?

Numerous high power RF sources exist in South Africa, notably the SABC's FM and TV broadcast signals. The photograph is of reception by the writer



Tropospheric Scatter reception: the SABC Nelspruit ch. 24 TV transmitter received over a scatter path of 270km. The shadowing is typical of a camera with focal plane shutter.

of the Neelspruit (ch 24) TV transmitter on 495.25 MHz over a path of 270 km. This signal is normally detectable at the OTH in Pretoria which has an inferior radio horizon in all directions. Fading on this signal is in excess of 15 dB, with several cycles per second being typical over this distance.

CONCLUSION

A method has been illustrated whereby VHF signals can be propagated much further than the normal line-of-sight, point-to-point, condition.

REFERENCES

- 1) VHF-UHF Manual (RSGB)
- 2) Tropospheric Scatter (Point to Point Communications, Feb 1984)
- 3) System Noise Temperature and System Performance (Radio ZS, Sept 1982)
- 4) Radio Relay Systems (Thomson-CSF 1981)

Reprinted from RADIO ZS, December 1984



OSP

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Telecom's Data Service has reached a milestone with the installation of its 100 000th data modem.

The service began 16 years ago with 200 bits and 600/1200 bits services — today it offers speeds up to 72 kbits.

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RICK MAKES IT TO THE GARDEN STATE



Rick, pictured in his endeavours wheel-chairing along Geelong Road, last month. — Congratulations Rick.

See page 60 — August 1986

Courtesy Herald & Weekly Times Pty Ltd

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WE SERVICE WHAT WE SELL

THE VOYAGE OF ST JUPAT

On 26th September 1985, on the 150th Centenary of the Hungarian Ship Construction Industry, two young Hungarians, József Gal and Nandor Fa, one a boat-builder, the other a mechanical engineer, left the yacht harbour of Opatija, Yugoslavia, on the shores of the Adriatic Sea, to circumnavigate the world.

The boat SAINT JUPAT, which they built themselves, has an amateur station on-board operating with the call sign HA4SEA/MM, or sometimes with the different prefix — HG4SEA/MM. Equipment is a FT7B (50W).

At the time of writing this article (7th January), they were sailing toward Capetown, South Africa, a destination they hoped to reach by the end of last month. There they paint the bottom of the boat and do a general clean-up of the equipment to eradicate the salt. Their journey will then take them in an easterly direction across the Indian Ocean to Sydney. They anticipate to arrive in Sydney by the end of March, or early April.

They intend to spend some time in Sydney to recuperate from the long trip, and to re-supply the boat.

After Sydney, they will sail to New Zealand and the various Polynesian Islands in the Pacific before returning to Europe in about two or three years.

Whilst at sea, they have regular scheds with various Hungarian Amateur Radio Clubs, among them HA4KYN. The times and frequencies of these scheds are: Daily on 3.660MHz at 0530UTC and 7.040-7.050MHz at 1030UTC. On Mondays and Thursdays at 1030UTC either on 14.260-14.270MHz or 21.260-21.270MHz depending on propagation. Times are approximate.

After their regular scheds they will be looking for contacts with other amateurs for a general exchange of news and information, and especially reliable weather reports.

Information supplied by Stephen Pall VK2PS. Additional information and photographs supplied by Lajos Nagyváti HASOW and kindly forwarded to Amateur Radio by Ken Stevens VK5OW.

AR

- HUNGARIAN SAILBOAT -
- WORLD TRIP ~
- 1985 ~

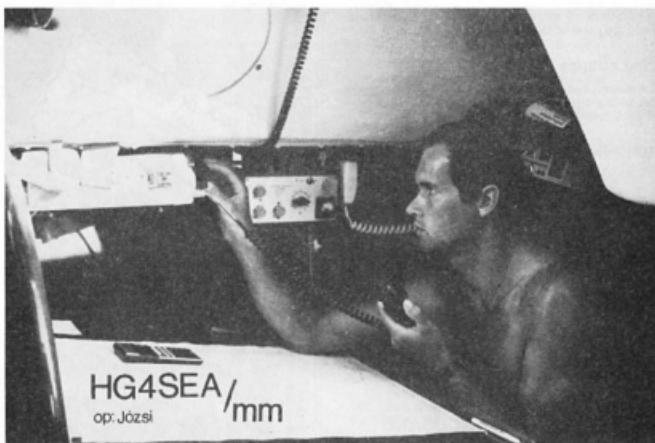
HG4SEA / MM

Yacht : St. Jupat
Sailors : Nandor Fa
József Gal

HG4SEA/MM.



Did you know ... In 1855, the Sydney and Parramatta railway line became the first Government operated railway line in the world!



Above

József tuning for stations on the FT7B. He is hoping to keep in contact with his wife Judit, via the Club Station HA4KYN. The maritime radio is to the right of József's hand.

Below

Nandi measuring the Coastal Radio Station's locational direction near the coast of Tristan da Cunha Island (ZD9) where they will have an eyeball QSO with Andy ZD9YL and his XYL Lorna ZD9YL.



CENTRED HOLES

To avoid having your holes drilled off-centre due to the drill wandering, engage the point of the drill with the centre-punch mark and turn the handle backwards once or twice before commencing to drill.

Doing this widens the punch-mark so that the drill sets into the mark accurately, and is prevented from cutting into the side of the punch-mark creating a new centre point and causing the finished hole to be off-centre.



**TRY
THIS**

Merv Smith VK2ZD
1 Bridge Street, Lane Cove, NSW. 2066

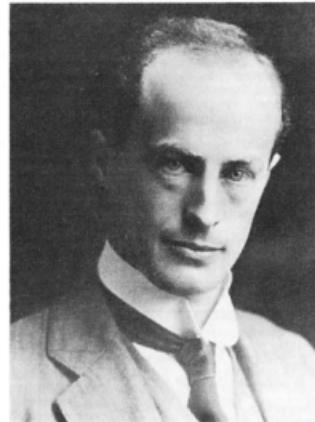
POLAR RADIO — 1912 style!



No radio equipment had been invented which could have helped Captain Scott's ill-fated Antarctic Expedition. In this article, the author looks back to what was probably the earliest experiment in polar communications, with its first test taking place on the very day Scott reached the South Pole.

Tony Smith G4FAI

1 Tash Place, New Southgate, London, N11 1PA, England



Sir Douglas Mawson, leader of the expedition.

Sir Douglas Mawson's Australasian Antarctic Expedition left Hobart on 11th December 1911, to explore hitherto unsurveyed areas of the Antarctic coastline. They established Telefunken 1.5kW wireless stations on Macquarie Island in the South Pacific, some 850 miles (1388km) from Hobart, and in Adelie Land, Antarctica. A further station on the Shackleton Ice Shelf, 1,500 miles (2414km) to the west, was to be equipped with wireless for receiving only.

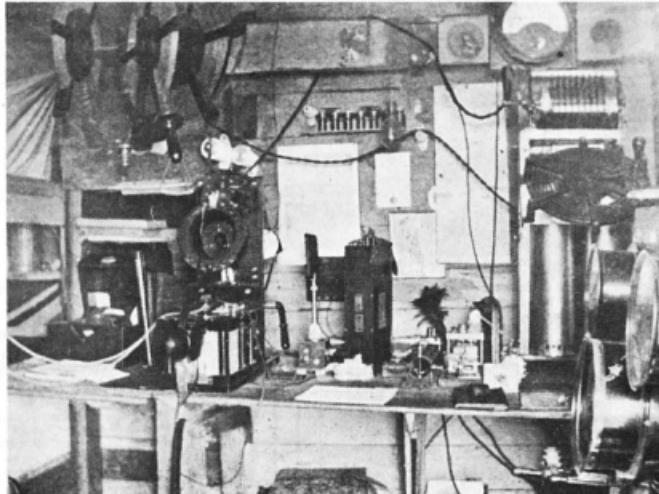
The story of the installation of these stations in a hostile environment, and the struggle to achieve and maintain communications, provides a fascinating picture of the state of radio in those times.

FIRST TESTS

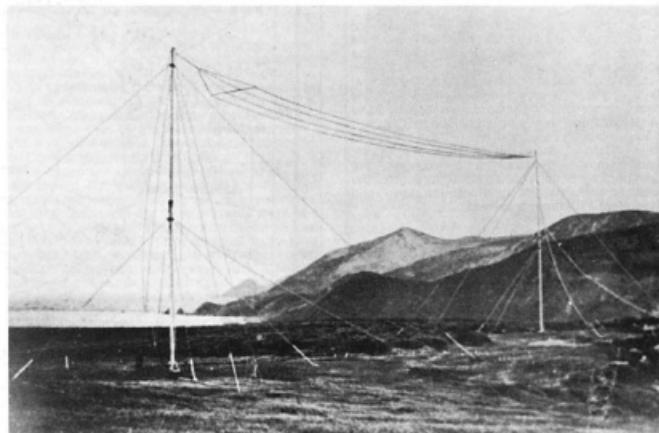
The Macquarie Island station was located on a 300 feet (91m) high flat-topped hill with an open northerly aspect (to Australia), plus, hopefully, a good 'set-off' south to Antarctica. The peaty, wet ground was expected to provide a good earth, and the height of the hill allowed a shorter mast, 90 feet (27m), than would otherwise be required. The only apparent disadvantage was the need to manhandle the masts, petrol engine, induction generator, dynamo, and other equipment up the steep hill from the beach.

On 17th January 1912, the day Scott reached the Pole, the first tests were made, and signals were satisfactorily received in another part of the island. On 2nd February, Wellington, New Zealand, was heard calling Suva in Fiji, and three days later, as a taste of things to come, a howling gale brought the newly erected aerial down. After another two days, the wind abated and it became possible to climb the mast, re-erect the aerial, and tighten the stay-wires. On the 13th, contact was made with a ship, the SS ULIMAROA. The following night Sydney was worked, together with three ships, one of which, HMS DRAKE, sent useful time signals.

On 10th March, a two-way contact was made with Suva, 2,400 miles (3862km) away, and the next day news was received over the air of Amundsen's successful expedition to the South



The station on Macquarie Island.



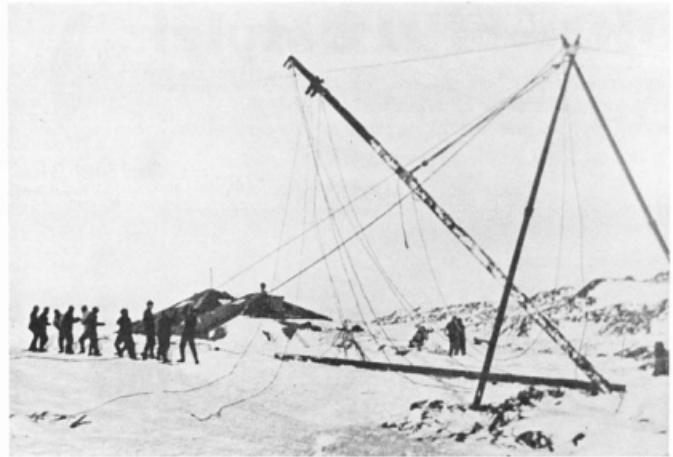
The antenna at Macquarie Island.

Pole. Many ships to the east of Australia were now calling at night, but with continuing gales the aerial was in constant danger of collapse, requiring frequent checking and adjustment of stay-lines.

On 1st April, it came down again, and a chain was substituted for the rope which had previously

secured it to the mast. The average humidity was 93 percent, and much of the equipment had to be shellacked for protection from excessive condensation.

Weather reports were sent nightly to Wellington, 1,000 miles (1609km) away. HMS DRAKE continued to send time-signals, and Macquarie re-



Erecting the lower section of one of the masts in Adelie Land.

transmitted these to Antarctica where they eventually resulted in the fixation of a fundamental meridian in Adelie Land.

ANTARCTICA STRUGGLES

The party in Adelie Land had set up camp in January, but because of blizzards were unable to start erecting their wireless masts until mid-April. Twenty holes were dug in the ice to provide anchorages for the stay-lines. Dynamite was used to clear the site, and to make holes for the three 90 feet (27m) Oregon pine masts. These were in sections, which were assembled aloft during many hours work, in 50-60mph (80-96km/h) wind gusts, and in temperatures well below zero. It was August before the aerial could be hoisted between the three masts, whence it was immediately blown down!

By September, all was ready. The engine and the dynamo turned, the note of the spark reached a crescendo, and a message was keyed to the world at large. Disappointingly, the only response was the crackle of atmospherics, and after several days of this, the only progress made was the discovery that, during transmissions, sparks could be drawn from metallic objects in the hut.

Transmissions continued, still without reply, and on 13th October, one of the masts broke in a gale. Since it was now necessary to concentrate on the main purpose of the expedition, exploration of the Antarctic coastline, the aerial was left down, and all wireless experiments ceased.

MISSING DETECTOR

In the meantime, the second party, 1 500 miles (2414km) to the west, were having even less success in wireless terms. Their base was established in February 1912, and the first blizzard they experienced brought both masts down. One only was re-erected, 37 feet (11m) high. It was then discovered that a detector, and other parts were missing, and hope of receiving signals from Adelie Land, and elsewhere, was abandoned.

"HAVING A HELL OF A TIME"

On Macquarie Island, however, wireless work continued successfully. The Pennant Hills high power station, in Sydney, asked for reports on tests it was making. News was regularly received from other land stations, and from ships in the Tasman Sea.

One of the transmissions from Adelie Land was heard faintly on 5th September, "Please inform Pennant Hills . . ." A.J. Sawyer, the Macquarie operator then called Adelie, repeatedly for hours, but without success. On 29th, he heard another

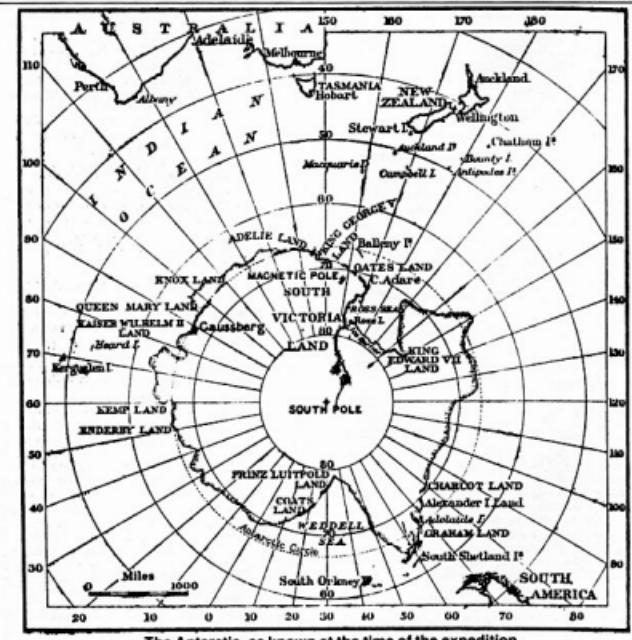
December 1912 to bring back the parties from the Antarctic. Upon arrival in Adelie Land, it was learned that Mawson, and two colleagues had not returned from an extended sledging trip. Whilst the ship waited, the broken wireless mast ashore was re-erected, in case it became necessary to leave a small party to search for the missing men.

By early February, the ship could wait no longer if it was to successfully collect the western party and not to be, itself, marooned in the winter ice. Shortly after sailing, Adelie Land radioed that Mawson had returned alone, his two companions having perished. The ship turned back, but a fierce gale prevented any landing or visual communication with the shore. Time was now vital, and once again the AURORA turned towards the west.

ADELIE LAND CALLING

With the ship gone, those left behind, numbering seven, settled in for the winter. The aerial was up again, and the operator, S.N. Jeffries, was at the wireless every night, calling and listening. On 15th February 1913, he heard Macquarie Island, but was unable to make contact. Five days later, Sawyer, in Macquarie, heard him and responded, "Good evening," whereupon a Leyden jar broke down, and contact was again lost.

Later in the month signals were exchanged, and a message was sent, via Macquarie, asking the Governor-General of Australia to seek the King's agreement to naming the land the expedition had discovered to the east, KING GEORGE V LAND. The first news received in return was that Captain



call, "Having a hell of a time waiting for calm weather to put up more masts", and 3rd October brought, "We do not seem to be able to get Macquarie Island; all is well, though bad weather has so far prevented any attempt at sledging".

MISSING PARTY

Equipped with a receiver, but no transmitter, the expedition's ship, SY AURORA, set out in

Scott, and his party, had died on their South Pole expedition. On 7th March, the King's approval was received by wireless for that part of the Antarctic, lying between Adelie Land and Oates Land, to be named as requested.

The station was now operated every night from 8pm to 1am. Notes were made of the strength of the signals received, the presence of atmospheric static, and intermittent discharges from snow



The station on Adelie Land.

particles — St Elmo's fire — together with fading caused by auroral activity. Listening alone was a demanding task, it was difficult to hear signals through the electrical interference, there was the constant howling of the wind, plus the noise of the expedition's dogs sheltering just outside the hut!

Jeffreys spent entire evenings trying to transmit, or receive, a single message. A week of auroral displays would result in a complete blackout, then freak conditions would occur and traffic would be exceptional. He sometimes heard stations in Wellington, Sydney, Melbourne, and Hobart, and on one occasion worked directly with the latter.

He sent weather reports nightly to Macquarie, which were often received there when no communication was possible in the reverse direction. These reports comprised three meteorological code words, for barometric reading, velocity, and direction of wind. The velocities recorded were so high, (103mph (165km/h) on one occasion), that no codes then existed for them, and new ones had to be invented.

AERIAL EXPERIMENTS

In June, part of the main mast came down, and experiments were made with kite aerials in a steady 70 mph (113km/h) wind. After three falls to the ice a box kite was beyond further use, and two other designs shared the same fate.

In July, the broken aerial was repaired. As rebuilt earlier, it had a centre mast at 90 feet (27m), and two smaller ones of 30 feet (9m), between which was stretched an 'umbrella' aerial with lead weights at the centre. In its place, two masts were now used to support an inverted L directional aerial which, in August, as the first signs of the Antarctic Spring appeared, re-established contact with Macquarie Island.

News was then received that the Queen had agreed to the naming of the tract of Antarctic coast discovered by the expedition's western party, QUEEN MARY LAND. On 6th August,

Macquarie signalled enigmatically, "Food done, but otherwise all right". Five days later came reassuring news that a steamer was on its way with much needed supplies, and when it arrived, remarks over-the-air indicated that the islanders were having a night of revelry!

In September, when the sea was frozen, communication was maintained with difficulty. In October, when the ice disappeared, wireless signals peaked at twilight, finally fading when daylight became continuous in November. That month, experiments were made with a small receiver mounted on a sledge, using lengths of copper wire run out on the surface of the ice as an aerial. Signals were received over short distances, but not beyond five and a half miles (8.5km).

HOME AT LAST

It was time for the expedition to return home, almost a year later than had been anticipated. The AURORA arrived at Macquarie in November, at Adelie Land on 13th December, and everyone was back in Australia by 26th February 1914. The station on Macquarie Island had proved its worth. It was taken over by the Australian Government, and continued to send meteorological reports to the Commonwealth Weather Bureau.

The expedition had discovered new lands, and had carried out scientific work in the fields of terrestrial magnetism, biology, geology, glaciology, tide, and oceanography. Their wireless work was almost incidental to all this, but they demonstrated the potential of radio in polar exploration, despite the fact that in those pre-shortwave days, communication was restricted in the Antarctic Summer to only a few hundred miles, at best.

Their determination and perseverance in establishing radio communication at all was remarkable. In these days of high technology, and material comforts, it is hard to visualise what they achieved with the technologies available. Copyright 1985 held by A Smith. Illustrations from "The Home of the Blizzard" by Sir Douglas Mawson, London, 1915.

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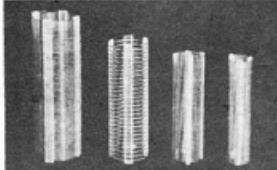
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3-16	3/4"	16	3"	No 3011	\$2.30	
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**JOIN in the Fun of the JOHN MOYLE MEMORIAL FIELD DAY CONTEST — 15-16th March
but DO NOT forget to send in your log.**

PACKET RADIO — THE FUTURE

In an article, 'REPEATERS — THE FUTURE', published in February's issue of Amateur Radio, an outline was given of the changes that have taken place in the Federal Technical Advisory Committee since the last WIA Federal Convention. The article continued by giving an outline of two discussion papers on repeaters, one prepared by the Department of Communications and the other prepared by FTAC. This article summarises a paper that has been written on Packet Radio.

Peter Gamble VK3YRP

CHAIRMAN, FEDERAL TECHNICAL ADVISORY COMMITTEE

INTRODUCTION

Packet communication is a recent addition to the many varied modes of amateur radio communication techniques. It is still very much in the experimental stage, with developmental work continuing in many places, particularly the United States of America and Canada.

Packet radio got its start in Vancouver, Canada, in 1979 with the development of a controller and modem by the Vancouver Amateur Digital Communications Group (VADCG). This design soon spread throughout both Canada and the United States.

With the personal computing revolution and the launching of elliptic orbit amateur satellites, high speed data communications around the world via radio became practical. This became the impetus for further development.

A major packet radio research and development organisation soon evolved in the USA, known as the Tucson Amateur Packet Radio Corporation (TAPR). This group developed its own hardware and software, and has close links with the amateur satellite organisation, AMSAT.

The American group, backed by AMSAT, held several meetings in 1982 which culminated in the agreement to a new communications protocol more suitable to amateur activities. This protocol was accepted by the ARRL in March 1983 as the preferred protocol. The original Vancouver Protocol was modified in 1984 to overcome some of the limitations of the initial version.

Thus packet radio is still very much an evolving aspect of the Amateur Radio Service. This is in line with the aim of the Amateur Radio Service to be a 'self-training, inter-communication and technical investigation' service. To enable the continued development of this (and other) aspects of the service, minimal restrictive regulations need to be imposed. The activities should generally be able to be carried on within the framework of the existing regulations.

DOC CONCERN

The Department of Communications, however, had a number of concerns about packet radio. These centred around unattended operation, bulletin boards, and who would be using the facilities. At the moment unattended operation is not permitted, and the DOC were concerned that active users of this mode would leave their equipment running at times when they were not nearby. As the packet radio techniques require a transmitter to be keyed to acknowledge receipt of a transmission, this would result in a breach of the regulations.

The concern with bulletin boards was twofold. Firstly, if they were connected to the telephone network, people without amateur radio qualifications could cause material to be transmitted over amateur radio. Secondly, material could be placed on bulletin boards which could be of a nature that, when transmitted over amateur radio, the regulations were broken. For example, it could be material of a 'commercial' nature. An unsuspecting amateur, retrieving this information would cause an offence to be committed.

To minimise these types of problems, DOC were making suggestions such as password access only to these facilities, so that all users could be registered. Further, that all messages had to be vetted to ensure they complied with the rules.

Against this background, discussions started between DOC and the WIA, and with various groups of packet radio enthusiasts around the country. The result of those discussions has been the preparation of a paper, REVIEW OF AMATEUR RADIO SERVICE PACKET COMMUNICATIONS, by the Federal Technical Advisory Committee. This paper looks at the nature of packet radio and its need for regulation, and makes recommendations to the Wireless Institute for consideration, and if accepted, for forwarding to the Department of Communications.

DESCRIPTION AND USES OF PACKET RADIO

Packet communications is a means of transferring information from one computer to another in an essentially error free form, with a defined protocol. The protocol includes the exchange of positive and negative acknowledgements. The data to be transferred, for example a line of text in ASCII, is bundled up into a 'packet', along with an address and error checking information. This information is then transmitted via radio to another station.

If this information is received correctly at the receiving station, then a short acknowledgement packet is transmitted to the sending station. This allows the next data packet to be forwarded to the receiver. If a packet is received incorrectly, then the sending station is advised, and the original packet is re-transmitted.

The address field usually contains information relating to the identity of the sending and receiving stations. This can either be the complete call signs of the stations involved, or a standard interpretation of the call signs.

The equipment used includes a transceiver, a terminal node controller (TNC) which controls the communication system, an input/output device, which is usually a personal computer, and a modem to convert the signals from the TNC into a format that can be handled by the radio equipment.

In addition to the above hardware, software to control the TNC and to enable the input/output device to communicate with it is also required.

The uses to which packet radio are put are limited only by the capabilities of the radio and computer installations at each end of the link. The following examples indicate some of the potentially wide range of uses.

* Point to point written communication. Although this is similar to RTTY, it is enhanced by virtue of the 'store and retrieve' capability. Thus the recipient does not need to be reading the incoming message as it arrives, as the system will automatically 'store' it. The message can then be 'retrieved' at a convenient time.

* Distribution of 'text' files such as newsletters, articles etc. These can be prepared 'off-line' using a word processor package, and then distributed 'on-air' as appropriate.

* Transfer of computer programs. By providing an essentially error free communications mechanism, large programs in both source code and binary formats can be transferred easily and reliably.

* Emergency communication capabilities could be enhanced by the use of packet radio techniques. This would be especially so where lists of names and addresses and other similar

information had to be transferred efficiently and accurately.

* Digital transmission stream for coded analogue information. For example voice, slow scan television pictures, and facsimile etc.

* Bulletin boards, for the distribution or exchange of information, new techniques etc.

* Shared use of 'network' resources. Such as high quality printers, extra computing power etc.

* Remote monitoring and control of unattended facilities such as a voice repeater.

Although the application of packet radio communication is mainly local at the moment, it is spreading overseas as more stations become involved in the techniques. Overseas contacts have been made via satellites and via direct HF contacts.

PROTOCOLS

The development of software and protocols used in amateur packet radio networks has been influenced by several factors.

* Existing, proven commercial standards should be used wherever possible, making only those changes which are necessary to allow operation in a half-duplex shared channel radio environment.

* The informal nature of amateur radio precluded against protocols requiring a central control site for access control and address assignment.

As indicated in the introduction, two separate protocols have been developed, the first in Canada and the second in the USA. Both protocols are based on standard High Level DataLink Control (HDLIC) frames and are loosely modeled on the CCITT X.25 packet switching standards. The main differences occur in the address field formats and error recovery procedures.

The Canadian protocol is usually known as the Vancouver Protocol after its city of origin, while the US protocol is known as AX.25, after the CCITT packet switching protocol X.25, which it is claimed influenced its development.

Each packet transmitted contains various types of information. This information includes synchronising, addressing and control information, as well as the actual 'data' being exchanged.

Various types of Terminal Node Controllers (TNCs) have also evolved. Some TNCs will handle only one protocol, while others have been designed to handle more than one. The balance between hardware and software also varies, making some TNCs easier to modify for new developments than others.

UNATTENDED OPERATION

Repeaters and beacons are the most usual form of unattended operation encountered in the amateur service. However, packet radio by its very nature, expands these requirements. In addition to the more obvious need for this capability in conjunction with a repeater, it also forms part of the operation of a normal packet radio station.

In order for the receiving stations TNC to confirm the reception of a packet of information, it is necessary for it to key the transmitter and send

an appropriate acknowledgement packet. To ensure that the transmitter is not keyed on for an excessive time and thus 'disable' the packet channel, it is necessary to incorporate fail safe watch-dog timers. These are usually implemented in both hardware and software and disable the transmitter should it not reset within a specified time.

While voice repeaters are normally located on the highest site around, the experimental packet repeaters are currently located in home or club premises. This is necessary because of the care that the sophisticated computer systems require. Further, such computer systems are normally associated with other facilities such as information storage and retrieval systems.

The most common form of unattended information storage and retrieval systems is the 'Computer Bulletin Board'. These are common in the United States and becoming increasingly popular throughout the rest of the world. Currently there are a number of these in Australia connected to the telephone network.

The computer bulletin board is designed to simulate a cork pin-up board, typically located in a community or library facility. A person viewing such a board can look at the headings of various messages left by others under a number of subject headings. Selected messages can then be retrieved and read in detail, and new messages can be posted. However, a computer offers the ability to set varying degrees of access so that the privilege of posting a message can be given to only a few people. Reading the messages can also be selective — some messages being read by all users, others being read by entering a password. This allows the owner of the system to control and vet the way it is used.

The least privileged access, 'Visitor Access', can be available to everyone, while an authorised user would need to be independently registered, supplying various details for this process, such as their name and address.

It is considered that a variety of users should be permitted forms of operation for amateur packet radio stations. However, various classes of licence may be required to cater for these types of operation.

RESPONSIBILITIES

The regulations that govern the amateur service have always allowed the amateur to develop and construct equipment to meet his needs. These regulations have prescribed the general technical requirements, but have not made any comment on the specific designs to be used. It is believed that this arrangement can be appropriately extended to packet radio.

Further, the regulations have always clearly laid down that the responsibility for the content of a transmission is always with the transmitting

station. All transmissions, or groups of transmissions, are required to be identified by call signs and some form of log is often required.

Again, it is believed that this arrangement can be appropriately extended to packet radio. All packets transmitted contain call sign information, enabling the originator to be identified. Further, all remote use facilities, such as a bulletin boards can be logged, with all essential information recorded.

While it is likely that the operator of a computer system might review all the messages before allowing them to be posted to a bulletin board, this should not be essential providing the user is appropriately identified, and the incoming transmission logged. Thus the originator of any material which is not permitted to be exchanged via amateur radio can be clearly identified.

It is therefore proposed that there be no restriction of access, by password or any other mechanism, for devices that extend the range of amateur transmissions, such as repeaters. However, it should be necessary for the operator of a computer system with bulletin board or other store and retrieval system to log and identify all incoming messages on such a system.

As the number of packet radio stations increases, and as stations are established to provide repeating and computer access capabilities, it is likely that networks will be formed. Again, no objection should be offered to this providing all stations are appropriately licenced.

It is noted that a number of computing systems already exist with connections to the telephone network. If such a system were to be connected to an amateur radio packet station, it could allow the general public to have access to the Amateur Radio Service privileges without having completed any qualifying requirements.

Accordingly, it is suggested that, where any system is connected to both a telecommunication network and the amateur service, material originated via the telecommunication network cannot be available for transmission over the amateur radio link.

As indicated in the introduction, amateur radio is an experimental activity. This experimentation should be encouraged within broad guidelines. It is considered that the guidelines presented above, together with the history of self-regulation of the amateur service, will ensure that packet radio will be an appropriate way of continuing the philosophy of amateur radio.

CONCLUSIONS

After consideration of the various issues raised by the development of packet radio communication, the Federal Technical Advisory Committee presents the following recommendations for adoption by the Wireless Institute of Australia:

1. All packet radio protocols which ensure that call sign information is contained in each packet

should be permitted, and that no requirements be placed on equipment design except those generally necessary under the existing Amateur Radio Service regulations. This includes both currently used protocols, Vancouver V2 and AX.25.

2. Any amateur radio operator may set up a packet radio station under the terms of his existing licence. Further, such a station may operate in the unattended mode for the purpose of receiving information from another packet mode station providing that suitable fail-safe firmware is incorporated to ensure that the transmitter cannot remain keyed on for an excessive period of time.

3. Any group of amateurs may apply for a licence to establish and operate a range extending or repeater device for packet radio. Such an application should be in the form of a conventional repeater application. No restriction should be placed on access to this facility by appropriately licenced amateur operators.

4. Any amateur or group of amateurs may apply for a licence to establish and operate a station which provides computer resources for other amateurs. Such an application should be in the form of a conventional repeater licence. It should not be mandatory for restrictions to be placed on access to this facility by appropriately licenced amateur operators, this being up to the discretion of the licenced operator. All calls to this facility are to be logged by the system, the information to be recorded to include call sign information and time and date. Further, if such a system is connected to a telecommunications network, then material originated from such a network cannot be made available for transmission over the amateur radio link.

Further, a system licenced under this section is permitted to automatically originate a call over the Amateur Radio Service and deliver a previously lodged message.

If the above recommendations are accepted, both by the WIA and the DOC, then amateur radio operators will be able to continue exploring new frontiers of technology in the traditions established over the last 75 years.

THE NEXT STEP

Complete copies of Issue 1.2 of this paper have been circulated to all Divisions of the Wireless Institute. It is currently undergoing its final refinement, pending its presentation to the 1986 Federal Convention in April 1986. Any comments or suggestions should be made as soon as possible, either to your Divisional Technical Advisory Committee or to FTAC. This will enable them to be considered prior to the printing of the convention papers. It is not until the Convention has considered this paper and voted to accept it, either in part or in full, that it will become WIA policy.

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AN AMATEUR HOLIDAY IN LIECHTENSTEIN

Ghis Penny ON5NT

Linesraat 46, B9880 Aalter, Belgium

At the end of June 1983 I took some leave to attend Europe's greatest annual amateur "get together" at Friedrichshafen, located on the shores of the Bodensee (Lake Konstanz) in Southern Germany with my XYL Monique. During our stay it was our intention to look for a suitable location for our 1984 annual holidays where we could combine a number of activities including of course, amateur radio.

At the convention, we spoke with Franz DJ9ZB, who has operated as HB0BOE on a couple of occasions, during contests. Franz gave us the address of his contesting QTH in Liechtenstein which was about one and a half hours drive from the location of the convention. At the meeting I received a free licence to operate from DL, OE, HB9 and HB0 with my 2m rig in the car.

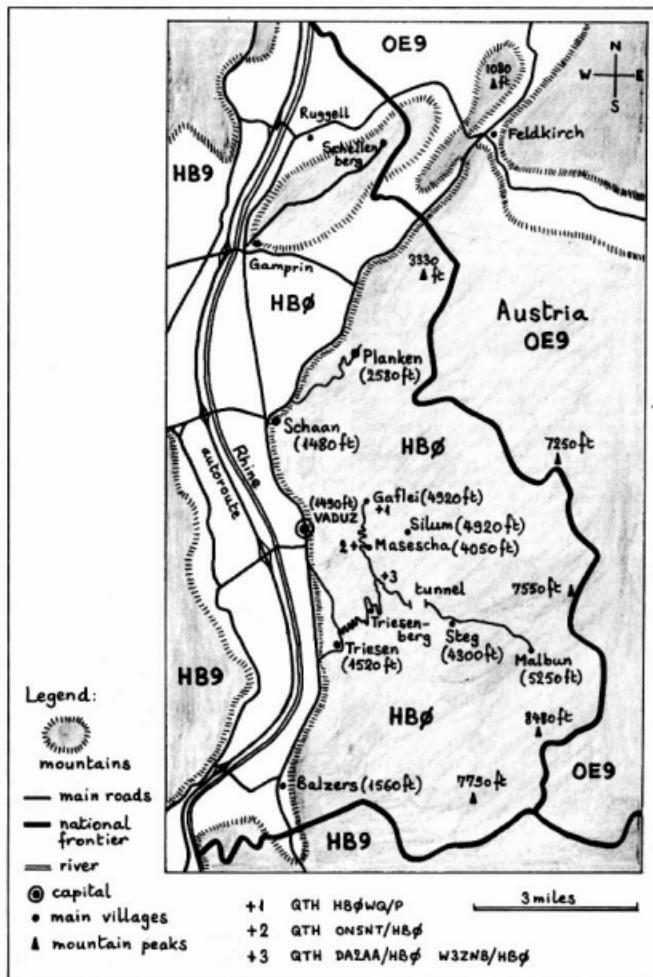


Hugo, HB0LL.

En route to the area Franz had told us about, we called in on Hugo HB0LL, and made a telephone call to the land lady that owned the holiday houses, making an appointment to see them and getting further directions. On arrival we were shown what was available and Monique and I decided on the adjacent house to the one that Franz used, as it would be more suitable for the children.



Our holiday QTH. To the right, Franz's holiday retreat.



Legend:



mountains

— main roads

— national frontier

— river

© capital

• main villages

▲ mountain peaks

+1 GTH HB0WQ/P

+2 GTH ON5NT/HB0

+3 GTH DA2AA/HB0 W3ZN8/HB0

3 miles

The principality of Liechtenstein, 158 square kilometres in area, came into being in 1719 and now has a population of some 26,000. Since 1866 it has been a sovereign territory under the Princes' of Liechtenstein, with its own parliament and government. In 1924, it accepted the customs jurisdiction of Switzerland and the Swiss franc became HB0's official currency. As Liechtenstein is integrated into the Swiss economic system, there are no longer any custom check points between the two countries. Topographically, this country is pre alpine in character and enjoys a very mild climate.



Ghis ON5NT, on the outskirts of the village of Malbun.

There are many hotels, alpine resorts and holiday chalets in and around Masescha, Silum, Gafel, Steg and Malbun. Rambling in the lovely woods on the hillsides and in the mountains provides you with all the exercise and relaxation one desires on a holiday. Attractions are almost unlimited, going from museums, art exhibitions, historical buildings, castles but above all an unspoiled and well cared for idyllic countryside, no grimy industry, a good potent wine and beautiful stamps!

Liechtenstein, which is about 450 metres above sea level, around 1100 hours local. Just outside the capital we started to climb and at Triesen, 460 metres ASL, we started to ascend to the Alps. It took about 45 minutes to accomplish the twelve kilometre drive to our destination Masescha, which is 1230 metres ASL. The higher we got the more fog we ran into and when we arrived we could barely see the house.

As soon as we unloaded the car, and since the weather wasn't conducive to go walking, it was a good excuse to put up the antennas. Seeing the house before was an advantage as I made a small wooden support to suit the roof and had allowed myself sufficient co-axial cable and wire to erect the antennas. When dusk descended with the fog still present I was ready to come on the air with dipoles for eighty and forty and a 12AVT trap vertical erected next to the house. The location gave me a nice take off for radio signals but I was cut off in some directions by the steep mountains rising to nearly 2000 metres. This resulted in no propagation at all to Asia, VK (short path) and very little propagation to the USSR.

The next morning when we arose, the snow covered Swiss mountain tops in front of us on the other side of the Rhine Valley glistened in the sun, and the fog had completely disappeared. The weather was beautiful and it stayed like that for the next eight days. In the mornings we relaxed and in the afternoons, long walks were taken into the mountains. This worked well with the propagation as twenty metres was at its best in the morning except for some African and South American stations. Fifteen and ten metres didn't open at all for any DX during our stay.

I had just started my first operation on fifteen with some Europeans, when my attention was drawn to a very strong SSB station 20 kHz down from my operating frequency. Soon I found that I had an amateur neighbour, Hugo HB9WQ, who was also spending his holidays, together with his family, in the

Alps. His QTH was located on the same mountain side as we were, but about 300 metres higher. Hugo was QRV as HB0WQ/P. This QSO was the first of many that we had on various bands during our vacation and an "eyeball" sesh was set up for the Sunday morning.



Hugo HB0WQ/P's QTH.

My friends from the Chiltern DX Club in the London area had asked for some 160 metre activity and I spent a morning putting up two eighty metres dipoles sloping down from the mountain side above the house, to the lawn in front of the house.

Being of a curious nature our next walk took us up towards Hugo's location. The QTH was found easily because of the wire antennae, a dead give away, but Hugo and the family were out and we would have to wait to meet them as arranged. The access to his QTH was very steep and virtually inaccessible by car, a credit to his driving ability. His QTH incidentally was close to the hotel in Gafel where Martti OH2BH, operated as HB0AZD in the 1976 CQWW CW Contest, one of, if not the best, position in HB0 to operate from.

In the evening I made my first contact on 160 metres, quite an experience as I was new to this band. Prior experience had been a few contacts as ON5NT/IT84, earlier in the year, during the IARU Region 1 conference. The first one to make it into the log was Roger G3KMA, followed by a number of Europeans. A number of W's were heard but unfortunately not worked. (This band is still not allowed in Belgium.)

NEW NEIGHBOURS!

Early in the weekend we gained new radio neighbours, Pat DA2AA and Allen W3ZNB, who had come over from Munich for a weeks operating and were staying at the QTH of Klaus DL7NS/HB0 which was about 300 metres from us on the same altitude but with a "mountain" between us. Klaus is quite active and his multicolour card of the area is known world wide.



L to R: Allen W3ZNB/HB0 (ex VP5M) and Pat DA2AA/HB0 — K7VAY, (ex K4FXT, TA2CA, KH6GOV, HS2AKP and C31UI).

Mid Sunday morning as arranged, Hugo and his family arrived and both families seemed to have so much in common that we decided to have lunch together at a cosy restaurant in Silum, with a beautiful view of the Rhine valley. If one had stepped off the terrace the wrong way they would have fallen about 200 metres.

After an ice cream for the XYL's and the children and a beer for the OM's, we started to walk into the mountains, enjoying the exceptionally beautiful and



Hugo, HB9WQ-HB0WQ/P.

A view of the Rhine valley. On the left HB0 and the right HB0.

The surrounding countries of this principality are Austria and Switzerland. The border of HB0 and HB0 is made by the river Rhine in the Rhine valley.

Getting a licence in HB0 is very easy and fast. Your application must arrive thirty days prior to your intended stay and I had my request back in ten days. One must use their own call sign /HB0.

THE HOLIDAY!

The bookings were made for the 17th July 1984 and as our destination was about a twelve hour drive from my QTH in north western Belgium, we made an overnight stopover in southern Germany and continued on the next morning under a very dark and overcast sky. We arrived in Vaduz, the capital of



Pat DA2AA/HB0 and Allen W3ZNB's QTH.

rich flora and breath-taking views of the valley. Hugo had taken his 2m hand held with him and after a couple of CO's was answered by Hans HB9CFD/M. Hans with his XYL were enroute to Liechtenstein. The call sign sounded familiar to me and my question of 'had he been QRV in Sri Lanka' brought a positive response. He had been 4S7OM and 4S83OM, a special prefix for WCY in 1983.



Hans HB9CFD also HB9CFD, DF5UG, 4S7OM and XYL.

Hans had crossed the border and we made an appointment to them in Sils, 1500 metres ASL, in about one hour. A very enjoyable "eyeball" QSO took

L to R: Standing XYL HB9WQ, HB9WQ, XYL W3ZNB, Monique XYL ON5NT, W3ZNB, XYL DA2AA, DA2AA. Sitting Myriam and Maggie (Harmonica of ON5NT), Heidi.



A view of the holiday homes.



L to R: Ghislain ON5NT, Hugo HB9WQ and Hans HB9CFD.

place high in the HB0 Alps. We had to part and Hans continued to climb to Malbun and we descended back to our cars where it was decided that we would visit the visitors from Munich who Hugo hadn't met as yet.



What normally would be a 5 kilometre trip. Hugo, who knows the area better than his home town of Zurich suggested a shorter route by using roads classified for use by "special mountain-cars". These were roads that you only look straight ahead on and in a short time we had spotted the beam antenna and were announcing ourselves by a CQ call on the horn of the car.

We had a very pleasant amateur get together and all agreed that the propagation was not being very kind on the higher bands and July wasn't the best month to visit in a radio sense. Al and Pat after our visit, decided to lower the beam so that they could elevate the 40 metre vertical and get some better contacts by concentrating on that band.

The week progressed and on the Friday morning, the day before we were due to leave, I decided to rise early (0430 UTC) and try the low bands: It was very foggy outside, similar to the weather when we arrived and on looking out the front windows, I saw five deer enjoying their breakfast. A fascinating sight.

Prior to closing down on 40 metres just after sunrise I worked ZL4ABO and ZL2ANR, who were putting some nice signals in on SSB. Now was the time to shorten the legs of the dipole for 30 metres and make a few more Europeans happy with a new country. I had already worked a few with the 40 metre dipole but the SWR was a little too high for comfort.

In the afternoon it was time to sadly dismantle the antennas so we could leave early next morning. Next morning as it happened it was raining very heavily and I was glad that I had given up my last evening of operating.



L to R: Hugo HB9WQ and Hans HB9CFD.

POWER LINE INTERFERENCE NOISE AND AMATEUR RADIO RECEPTION

I wanted to write this article because it is my last chance to use the VI prefix. When this article is printed I will be a VK again. I surely enjoyed the 75th festivities using the VI call sign on paper and on the air. Now to this article.

Sam Voron VI2BVS

2 Griffith Avenue, Roseville, NSW. 2069

For years radio amateurs have had mixed success in tackling the Power Line Interference (PLI) problem. Sometimes a continuous source of interference is identifiable by a DOC inspector and he would request electrical authorities to look at the fault. Other times the detection of intermittent and/or multiple sources was so time consuming for authorities that we either stopped communicating or switched off.

Another alternative is to do the detection yourself. Using an ultrasonic detector kindly loaned to me by Eddy VK2ZZ, of Kiel Electronics in Sydney, I was able to locate 88 sparking insulators on 34 power poles within 500 metres of my home station. The ultrasonic detector works on the principle that sparks create ultrasonic noise. Using this hand-held device one aims for the greatest noise and then identifies its source through a pair of built-in sighting holes. This study was conducted at all hours of the day and night over a one month period; 19th February-19th March 1985.

WHY SHOULD AMATEURS LOCATE PLI SOURCES?

Because authorities would not have the resources to spend one month conducting such time consuming field studies.

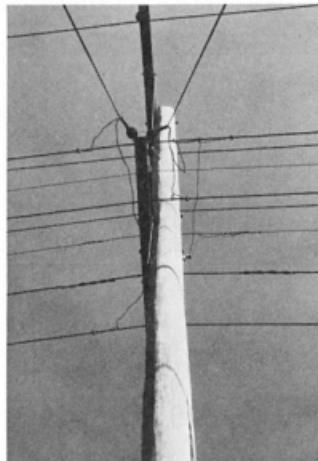
IS PLI NORMAL?

During my study I found that around sunrise, or during wet weather, or on cool windless days no Power Line Noise (PLN) exists from 1 to 200MHz. Thus no sparking across insulation would seem the normal state of a correctly functioning 11kV power system. This was confirmed by three visits by DOC inspectors, who could not find any interference coinciding with their visits. At these times there was no PLN on my amateur radio. My equipment is as sensitive as the best receiver and aerial system typically used by radio amateurs — if PLN were normal it would certainly be capable of picking it up 24 hours a day! However, it was mainly on windy days or during dry periods of several days that one or more of the repeatedly identified troublesome 34 power-poles with 88 separate identified sparking points caused interference to broad sections between 1MHz and 200MHz. There were other poles which were never found to spark or produce PLI.

My study showed that where there is no sparking in PL hardware there is no noise of PL origin detectable by my equipment (TS930S transceiver, TH7DXS 20, 15, and 10m, 40Z Beam for 40m and 1/4 wave slopers for 160 and 80m). 11kV power lines run along the front of our block, but whenever there is sparking this shows up as broadband PLI affecting amateur radio, FM broadcast or frequencies depending on which sections of the range 1 to 200MHz the PLN generating resonances are affecting. In these cases the PL is acting like a spark gap transmitter where the metal parts of the pole (cross arm pin, bolts, insulator pins, nuts and conductors) form the inductive part and the wood and porcelain represent the dielectric of the capacitive part of the interference generator. The spark indicates insulation breakdown or an electrical discontinuity in conductor functions such as corrosion. Eliminating sparks removes current transients which generate the interference producing RF energy.

WHO PAYS FOR FIXING PLI?

From an annual income of, say \$20 000, any radio amateur is willing to spend a small percentage on fixing interference caused by his equipment.



The Loose Nut and Metal Support seen on the Top Cross Arm which carries 11kV. The Bottom Cross Arm carries 240V. The sparking is detected under the three nuts holding the Top Cross Arm Insulators. The effect of the Loose Nut on the Metal Support is the Resonant Frequencies which the Spark Current will trigger.

Equally, one imagines that electricity authorities, with their income of millions of dollars, would be willing to spend a small percentage to rectify similar problems. Enormous public relations and goodwill can be gained by electricity authorities when, like radio amateurs, they take an interest in reports of interference and act as soon as possible.

WIA, DOC AND ELECTRICITY AUTHORITIES

From discussion with DOC Headquarters, Canberra I understand that interference affecting reception of amateur radio, TV or radio broadcasts is treated equally. There is in each case equal concern and equal resolve to reach a solution. There is agreement that, where amateur radio is the cause of interference and thus responsible, so too if PLN is the cause of interference to amateur radio, electricity authorities must rectify the problem.

Electricity authorities generally will not accept interference reports unless they have been checked by DOC. Because it is impractical to duplicate a one month study, as in my case study, I am suggesting that where interference from intermittent multiple PLN sources occurs to amateur radio that state DOC accept advisory reports by WIA appointed PLI investigators. This is possible under the new Radio Communications Regulations.

WILL STANDARDS FOR PLN LEVELS HELP?
DOC has not yet adopted standards in relation to PLN.

Henry W4PZV, in 73 magazine February 1980 says "Fortunately for all of us in the United States, there are no minimum limits established for radiation of interference from overhead powerlines. Had there been a minimum level established, we might have had to live with it, no matter how disruptive it was." The US FCC considers overhead powerlines to be an 'Incidental radiation device'. FCC Rules Section 15.23, Part 15 states "an incidental device shall be operated so that the radio frequency energy does not cause harmful interference. In the event that harmful interference is caused, the operator of the device shall promptly take steps to eliminate the harmful interference." FCC Rules Section 15.4(b), Part 15 define 'harmful interference' as "any emission, radiation or induction which seriously degrades, obstructs, or precludes the reception of radio communication service".

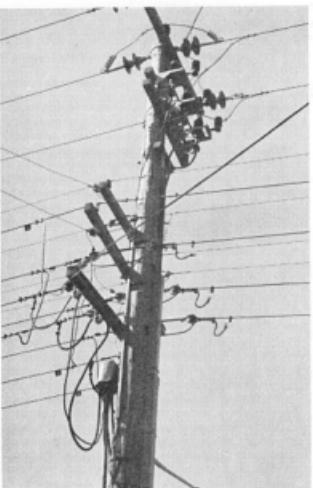
AMATEUR RADIO RECEPTION

Prior to my study outlined above, I directly requested the electricity authority to remove, from outside my front yard, a pole-mounted transformer which emitted S6 noise on 1.8MHz. The transformer was revamped and returned to the pole some two years ago. I have had no noise since on 1.8MHz. Now my problem is to contact those USA 160 metre operators who keep telling me they just hear someone calling under their S6 noise level. I never imagined that the S-meter could read zero on 160m.

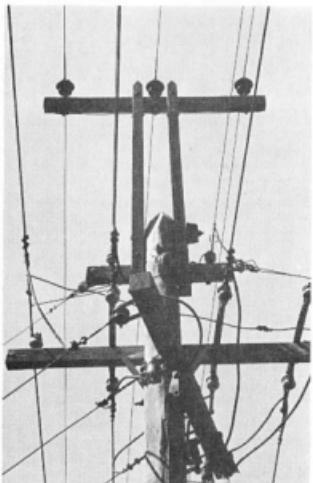
Transformers normally cause only low frequency noise. Noise on frequencies between 4MHz and 200MHz is most likely due to sparking in overhead high voltage lines, 11kV up. There are always exceptions to these trends. Since everything is connected along PL systems one can be led to the wrong conclusions as PLN can propagate for several kilometres. I remember having to run down the road and kick a pole to make the noise stop on 7MHz — the pole had loose nuts and bolts. Noise would wipe out my reception on 14, 21 and 28MHz when a whole row of poles



The Transformer which was replaced two years ago outside the VI2BVS QTH. In addition, all nuts and bolts were secured when the Transformer was revamped, and no problems have since been observed, especially during the intensive one month case-study. It is expected that a tightening of hardware, or cleaning of Disc Insulator Metal Parts and/or tensioning will cure the PLN at this case-study.



The Top Cross Arm shows the Double Disc Insulators which often lack tension. The Cross Arm below these shows the Underground Cable to Overhead Lines passing through the insulator sitting on a metal base. Noise can be detected where the cable enters this insulator. The Stand-off insulator is a Lightning Arrestor.



The Loose Staple and Bonding Wire under the three insulator Nuts. PLN emitted from these three Nuts holding the insulators on the Top Cross Arm carrying 11kV.

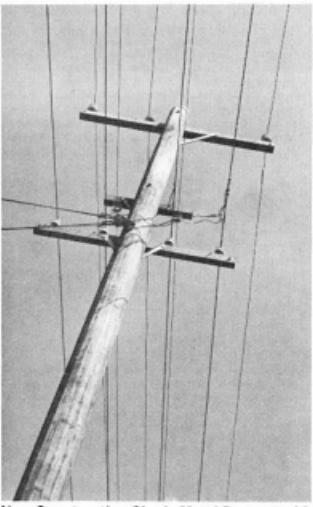
would spark between the rusted nuts and insulator pin and shorting wire holding three 11kV insulators. 7MHz to 200MHz would display noise as double disc insulators sparked across their corroded or loosely tensioned joints. Particularly savage (S9+) was the noise even at 52 and 144MHz when underground to overhead insu-



Disc Insulators at Dead End Pole. Notice how loose the three bottom power lines are. In fact they can be seen swinging in the wind and heard sparking on the Ultra-sound Detector.

lators sparked. You can appreciate the delight of days with S9 noise levels when you are usually subjected to the frustrations of such interference conditions.

I detected sparking only on 11kV lines, none from the 240V lines. Several times neighbours would ring suspecting it was me causing dots on their Channel 0 and 2 television. When I turned up in their homes they would say; "Oh, it can't be you, it must be something wrong with my TV set."



New Construction Single Metal Support with no Earth Strap Bonding Wire under the Insulator pins showed no noise.

ADDITIONAL NOTES

Rainy days often provide a short circuit allowing leakage currents to flow across a junction instead of sparking over. In dry weather sparks can occur at loose points, corroded points or moving points.

Into the field take an ultrasonic detector (sometimes you can even hear sparks by ear at 27MHz "Walkie Talkie" without a built-in noise limiter (this is not a good way to track the noise source but will give a rough indication of noise level even though it will vary greatly — it's most important purpose is to tell you if the noise is still occurring). Also take binoculars to note any visual irregularities on the pole hardware, paper and pen and flashlight for night patrolling. The best way to track sparking sources is to systematically check all poles in your area when noise is occurring, then check sources when no noise is heard as extra correlation to the interference. When using the ultrasonic detector

you will learn to distinguish between sparks, insect noises and gas or underground water flows. A Tasmanian radio club purchased such a detector and lends it to its members. Try doing PLN studies through your club, WIA, or DOC because your electricity authority may be unhappy with a seemingly haphazard report. Form a group to combine the skills in your area on this matter. My thanks for providing so much assistance in this project goes to Tony VK3QQ, former EMC co-ordinator and Eddy VK2ZJ of Kiel Electronics, 26 Gammell Street, Rydalmerre NSW 2116.

References provided by Tony VK3QQ included:

"Reference to VHF TV Services from Overhead HV Power Lines." — Monitor — Proceedings of the IRE Australia, December 1978, page 167.

"The Location, Correction and Prevention of RI and TVI Sources from Overhead Power Lines" — IEEE tutorial course, A Continuing Education Service of the IEEE Power Engineering Society, Course Text 76CH1163-5-PWR.

"In Search of Power Line Interference" — how to find it and get it stopped, — 73 magazine, February 1980, page 66.

"Ultrasonic Ear Finds Power Line Faults" — Electronics Australia, September 1979, page 86.



Remote Australian communities of 200 people or more should have at least one additional commercial radio service later this year.

Communications Minister Michael Duffy said he expected to act quickly to introduce additional commercial radio services once the Forward Development Unit of DOC finished its report on the future of commercial radio, by the end of this month.

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Vol. 2. No. 3.

JULY 16, 1928

Supplement



W Felton OA-2RF, one of the most consistent transmitters on the air today.



Bill Crawford, NSW Radio Inspector, who is not half so formidable as this picture makes him out to be. He is one of the pioneers of radio in Australia.



W B Crocker OA-2BB, an old NSW amateur, who has just returned from a trip to England and is enthusiastic over the efficiency of British transmitters.



Trevor "Wattie" Watkins OA-7DX, one of the best "Fists" in Australia. He now operates on crystal control.



Payson R Gould NU-9DHP, RADIO'S NW USA correspondent. His signals are consistently heard in Australia.



Phil Renshaw OA-2DE, Vice-President of the old WIA, a pioneer radio amateur, who is not often heard these days.



Harry Kauper OA-5BG, also chief engineer of SCL. He was responsible for the Stopwith-Kauper gun mechanism, which enables firing through the propeller field of an aeroplane.



H T Simmons, ex OA-6KX, now 3KK, whose signals are well received. He is returning to Perth shortly, where he will be heard again under his old call sign.



Max Howden OA3BO, one of the first Australians to QSO England on the 80-metre band. 3BO has now recovered from the disastrous fire which destroyed his whole station some time ago.

The above reprinted page was contributed by Peter Alexander VK2PA, and may bring back some memories for Old Timers.

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TO TAKE FULL ADVANTAGE—



OF ITS ENTERTAINMENT—



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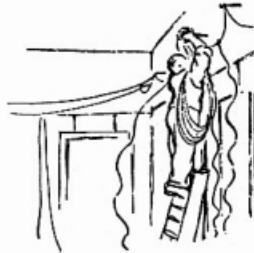
BITTEN—



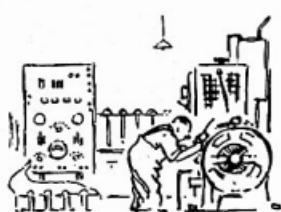
WITH THE SUBJECT—



YOU WILL—



NEVER AGAIN—



HAVE—



MUCH—



LEISURE FOR LISTENING.

SIMULATED EMERGENCY TEST (SET) 1985 & PACKET RADIO REPORT

Sam Voron VI2BVS
2 Griffith Avenue, Roseville, NSW. 2069

The Fourth Annual SET took place from 22nd-24th November 1985. This event allows any Australian amateur radio operator to simulate a disaster, or event, and plan how to provide health and welfare communications to the general public via the daily schedules of the Australian Traffic Network (ATN).

COULD NOT PARTICIPATE

The SET weekend used by the ATN is made to coincide with the Wireless Institute Civil Emergency Network (WICEN) SET weekend. WICEN operators, under their own particular scenario and network, mobilise state, national, or international links, which are normally co-ordinated by NSW WICEN.

This year, NSW WICEN, with its busy schedule, could not participate, and the ATN, only just recovering from the Mexico City Earthquake communications, was also inclined to avoid participation in the weekend. However, having read two articles about Packet Radio for beginners in two QST magazines, a SET combining Packet Radio became an exciting prospect.

QST, October 1985, p64, says "Packet Radio is hot! It's the hottest thing in amateur radio since the repeater craze of the 1970's".

In all three previous SET exercises, the weak point in providing communications has been the international link. A handful of messages have been passed over voice or CW, and then there is no propagation again until the next day. Even during the Mexico disaster hundreds of messages were passed nationally to collecting points, but it was then a problem to pass them quickly and accurately overseas. Luckily, with this operation, Overseas Telecommunications Commission (OTC) provided free telephone links between amateurs in Australia and the USA. The US amateurs then relayed the messages, via amateur radio to Mexico City.

LET'S TRY A NEW METHOD

But, what if the next disaster is in Australia and OTC links are affected or not available to some area of the world? Would Packet Radio be the answer for relaying hundreds of messages over small available propagation paths?

So, what is this Packet Radio? Simply, with Packet Radio, numbers, figures, and letters can be entered on a keyboard, is a computer, and is connected, via a 'black-box', to amateur radio. It may be asked, how is this different from RTTY Baudot? Baudot is normally less than 100WPM, but Packet is transmitted faster than 360WPM on HF and faster than 1440WPM on VHF, and it also guarantees perfect reception.

I set myself a project to see if a beginner who knew nothing about computers — I had always completely avoided them — could be set-up for Packet Radio within a three week deadline.

WHEELS IN MOTION

A phone call was made to Packet Traffic Handler, Don NI6A, who suggested a PK64 Black Box between a home computer and amateur radio was all that was needed. The relevant equipment was then ordered from the United States.

The Countdown to SET 85 then began — at minus three weeks the computer arrived. There was then much delving into the manual and many conversations on-air to find out specific meanings.

Minus two weeks — the PK64 arrived and it was back to the manual again. Incidentally, the PK64 also works on AMTOR, RTTY, ASCII, and Morse, but I decided to wait until after SET to read about these operations.

Minus one week and the fast-switching linear amplifier, designed for the increased US amateur power limit arrived.

A second PK64 was available for one week period over the ATN and was given to John VK2PJB. With only a novice licence, John could not send but could only receive. John is a 14 year old computer buff and he was able to assist me to quickly digest some of the 'ins and outs' as we experimented for three days leading up to SET.

BEACON IN OPERATION

With only the briefest of two-way contacts prior to SET, 0800UTC Friday arrived. The PK64 was set on Beacon Mode and 30 seconds on 14.103.5MHz LSB was selected. Every 30 seconds an automatic message was transmitted — "VI2BVS Beacon Sam in Sydney, Australia. Welcome to the Australian Simulated Emergency Test". If anyone called me (and you can have more than one QSO on Packet) the PK64 would then automatically transmit the message "VI2BVS Beacon — Please leave simulated welfare message in ARRL format, then disconnect. Thank you".

Stations from all over the USA lit up my TV monitor with Beacons, Bulletin Boards, Mail Boxes, and CQ Calls — it was like watching a high adventure on television. LA6OCA, in Norway, said he was the only Packet Bulletin Board station in Europe and this was his first contact with Australia! We communicated for about an hour.

AIMS OF SET

The three aims of SET are:

to find out our strong points and limitations in providing emergency communications. SET provided me with the incentive needed to get Packet operational at my station. Others activated the now familiar 28.500MHz Emergency Preparedness Sydney Traffic Net check-in frequency, which SET has helped to establish for quick activation in time of emergencies.

to help amateurs gain experience in communicating, using standard procedures under simulated emergency conditions. Many checking into the VI2BVS Beacons were not familiar with traffic handling or the ARRL format. Packet allows details of such standard procedures and formalities to be sent quickly.

to provide a demonstration to members of the public (this is normally the ATN function) and to serve agencies such as Red Cross, Civil Emergency Authorities, Salvation Army etc (this is normally WICEN functioning) and of the value to the public of amateur radio, particularly in time of need. Australian Associated Press (AAP) was contacted and details of the simulated energy crisis scenario, composed by Martin VK2PJB, were released, with an invitation to members of the public to visit VI2BVS's shack to see amateur radio and SET in action.

Linton, a 14 year-old studying for his amateur licence and a helper during the Mexico City Earthquake, and I kept the automatic Packet Beacon company during the night.

PLENTY OF PUBLICITY

During SET, Radio 2KY, in Sydney, with Dave VK2NH, well-known amateur and news-reader at the mike, carried several news items about the event. SET concluded at midnight on Sunday.

AAP released a story Australia-wide, of how radio amateurs and a home computer, together with the Mexico City experience, were being used to develop an even better emergency communications service for the public. AAP were particularly interested in any details of further upcoming amateur radio events.

Packet Radio allows one station to be relayed through another Packet station on the same

frequency. This is called Digipeating. One of the next experiments developed from this SET experience is to set up a 124.103.5MHz Packet station in the middle of a shopping centre and, in a simulated disaster, have the VI2BVS home station, with directional aerial, beaming the USA digipeat the signals, subject to DOC approval.

One of the American experiences has been the usefulness of using two home computers operated by two teams. One to maintain the Packet link, the other to be involved with the actual welfare message storage onto disk, using disk drives. This would be useful, although for this first SET exercise one computer was used to perform both functions.

More information on traffic handling and related experiments and tests can be obtained by participating on the following daily third party traffic networks.

AUSTRALIAN TRAFFIC NET (ATN) at 0930 UTC on 3.570MHz +/- Novice Phone Section.

WEST AUSTRALIAN TRAFFIC NET (WATN) at 1100 UTC on 3.620MHz +/- QRM.

AUSTRALIAN AMERICAN TRAFFIC NET (ATAN) Primary at 0030 UTC on 21.415MHz. Secondary (if needed) at 0400 and 0500 UTC on 14.285MHz. Also 0800 UTC on 7.228MHz.

INTERNATIONAL ASSISTANCE AND TRAFFIC NET (IATN) at 1130 UTC on 14.303MHz.

AR

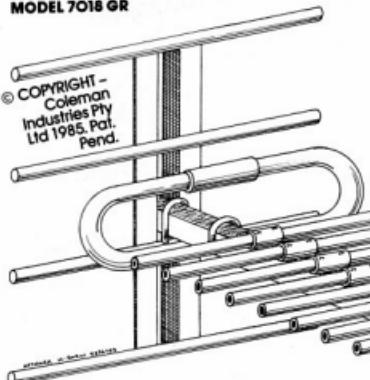
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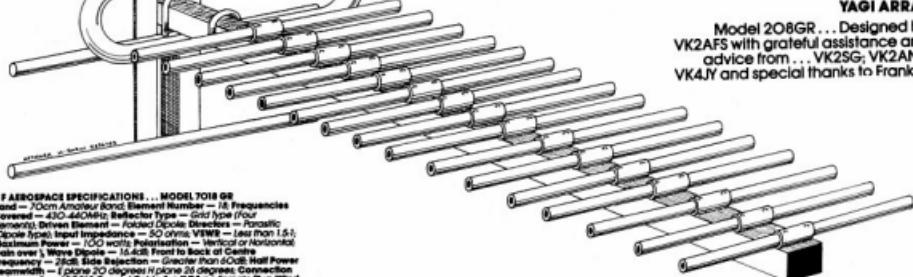
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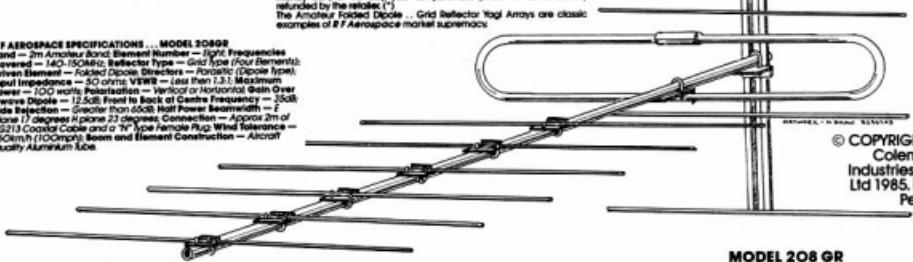
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AMATEUR BANDS BEACONS

FREQUENCY CALL SIGN LOCATION

50.010	JA2IOY	Mie
50.020	JAG6YBR	Japan
50.060	KHE6QI	Honolulu
50.075	VSE6IQ	Hong Kong
50.109	JD1YAA	Japan
51.020	ZL1UHF	Mount Clunie
52.013	P29BPL	Loloata Island ¹
52.100	ZLS6X	Niue
52.250	VK6VIF	Darwin
52.250	ZL2VHM	Manawatu
52.310	ZL3MMF	Hornby
52.325	VK2RRHV	Newcastle
52.370	VK7TRST	Hobart
52.420	VK2RBY	Sydney
52.440	VK5VIF	Gladstone
52.450	VK4RTL	Port Hedland
52.460	VK5SVF	Mount Lofty
52.470	VK6RPH	Perth
52.470	VK7RNT	Launceston
52.490	ZL3SMF	Blenheim
52.510	ZL2MMF	Upper Hutt
52.510	VK6SSB	Burnett
144.400	VK4RTT	Mount Mowbray
144.410	VK1RCC	Canberra
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.480	VK4VF	Darwin
144.500	VK5ZWP	Mount Gambier
144.555	VK6RBP	Port Hedland
144.800	VK5SVF	Mount Lofty
144.950	VK2RCW	Sydney
145.000	VK6RPH	Perth
432.057	VK6RBS	Busselton
432.160	VK6RPR	Nullards
432.220	VK6RY	Sydney
432.440	VK4RBB	Brisbane
1296.171	VK4RBS	Busselton
1296.420	VK2RSY	Sydney
1296.480	VK6RPR	Nullards
10300.000	VK6RPF	Roleystone

(1) The P29BPL Beacon is definitely on 52.013MHz as I heard it several times during December and January. Previously, there had been a query as to frequency.

(2) VKOMA has been deleted for the time being as Mark VK0AO will be returning home on the seventh of this month and its continuing operation is in doubt for the moment.

(3) VK3RMB, on 432.425MHz, has been deleted for the present, while being repaired.

SPORADIC E IN 1985

Under that heading last month I asked "Just how do you describe what has so far happened on both six and two metres, up to 21/12? ... there hasn't been anything quite like what has happened on six metres and so consistently for quite a long time". The same heading could again be applied, with even more emphasis, for the period from 21/12 to early January 1986. Over and over again the comments could be heard on the six metre band in particular, that such an Es season had not been observed before by so many. In 25 years on the band, I do not know of a better period and those on the band for 35 years and more are saying the same thing! The range of contacts has been incredible, the whole of Australia and New Zealand, and some parts of the Pacific being worked day after day, with the band open for probably 24 hours at a time. I have come into the shack around midnight local time and had contacts, on one occasion with a New Zealand station, and his local time would have been after 2.30am! He said the band had not closed, so why should he?

Such outstanding performances have not been limited to the six metre band. Two metres has given the greatest performance of all time — that is a sweeping statement, but a true one! In a matter of a few hours, it has been possible, on at least two occasions, to work VK2; VK3; VK4; VK5;

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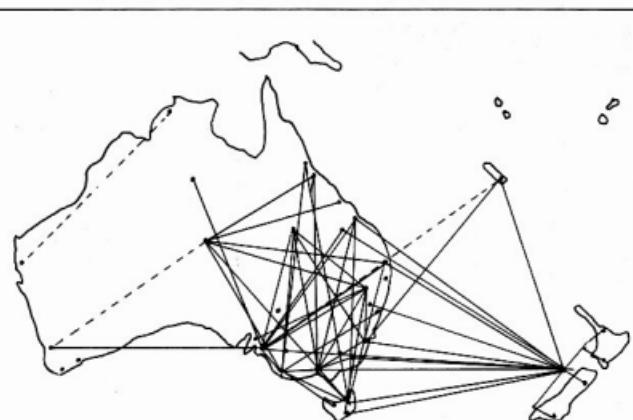
VK7 and VK8 from VK5, mainly from Mount Gambier, but that is still VK5! Six States on two metres and being heard in New Zealand as well in one day. Hardly believable. Contacts have extended from Townsville to Tennant Creek in VK8; Alice Springs was heard in VK6; down through VK5 to Adelaide and Mount Gambier; all through Victoria; down to Tasmania (who also worked ZL on two); up through New South Wales and back into Queensland. More than half of Australia being involved in the one day. In addition, VK2 at least, plus ZLs worked a string of F/K stations in New Caledonia on two metres, most of whom were only 10 watt mobiles.

As I write these notes at night on 15th January, two metres opened again over much of the eastern half of Australia around 0730, with stations being heard (and some worked) from VK1; 2; 3; 4; 5; 6... and ZL1 VK5s ZDR; RO; ZBU; ZWP and AE1 at least worked Brian ZL1BHX around 0800 to 0825 when the band closed. I was having my evening meal!! I believe the last recorded contact on two metres between VK5 and ZL was the one establishing the record for VK5 between VK5BZC and ZL2HP on 23rd December 1965, a distance of 3149km. Unless there are other VK5s further out who worked ZL then the distance record may well shift to VK5ZWP at Warradale which is one of the suburbs of Adelaide.

Congratulations to those who were around to complete the contacts — it shows you still need to be vigilant and around at the right time. Col VK5RO mentioned it was necessary to move the antenna around to the various VK States for contacts to be made as there were so many stations on that strong signals were necessary to be heard! This opening over such a wide area, even greater than at the end of December, adds the cream to the cake for Es operation this year and it may not be finished yet, it is still only the middle of January as I write these notes, so who knows what might happen in the next few days.

For several years now I have been advising operators to be ready for greatly increased Es during the low part of the cycle (1985 and 1986) and exhorting them to watch out for two metre contacts. I now feel my words have not been wasted, the results speak for themselves. It has been a truly remarkable Es season and will be a great fillip to keeping VHF alive. It shows there are still plenty of people around prepared and able to work two metres SSB when the occasion merits, despite the inroads made into the usage of the two metre band by FM and the repeaters.

I wish to thank Trevor VK5NC, Colin VK5DK, Brian VK2AKU, Joe VK7JG and Peter VK6ZLX who have been kind enough to send me copies of their logs for the period around 1st December 1985 to 7th January 1986 which has enabled me to do several things which could be of interest to



This map indicates the spread of two metre contacts during late-December 1985, between Australia, New Zealand and New Caledonia. To stop crossing lines into New Zealand all contacts have been indicated to a central point, which could mean any one of the four ZL call areas. The dots around the Australian coast-line, starting from North Queensland and going clockwise are for Cairns, Townsville, Rockhampton, Mackay, Brisbane, Byron Bay (blank), just inland is Narrabri, Taree, Sydney, Canberra, Melbourne, Mount Gambier, Adelaide, Port Pirie, Esperance and Albany (blank), Perth, Carnarvon and Darwin at the top. In the centre is Alice Springs and above that Tennant Creek. Longreach is in Central Queensland and Springsure/Emarald is further east towards Rockhampton. The dotted lines indicate signals heard but not worked. Tasmania shows Burnie in the north, Launceston and Hobart towards the bottom. Noumea (New Caledonia) is the island in the Pacific with lines drawn to it.

readers. In conjunction with my own log I have been able to establish the following:

ON SIX METRES: From the six logs I have there have been at least 402 separate call signs from VK1 to VK8 inclusive, comprising seven in VK1, 83 in VK2, 124 in VK3, 72 in VK4, 54 in VK5, 28 in VK6, 17 in VK7 and 17 in VK8. Of the 402 stations there were 216 full calls, 128 limited calls and 56 K calls or combined limited and novice.

ON TWO METRES: There are 166 call signs for this band, comprising three in VK1, 26 in VK2, 57 in VK3, 24 in VK4, 28 in VK5, three in VK6, nine in VK7 and six in VK8. Of these there were 102 full calls, 43 limited calls and 11 K or combined calls.

Of course everyone knows there are a lot more stations around who had plenty of contacts on both bands so perhaps we could safely say somewhat over 500 calls were on six metres at some stage and over 200 on two metres. A lot of calls worked both bands too, but it does indicate a quite high degree of interest and activity on these VHF bands. A lot of contacts were made on 70cm too, and on several bands higher than that by some, but for the moment comment is being centred on 52 and 144MHz.

In addition to the above VK stations, on six metres there were 13 stations signing ZL1, 22 for ZL2, nine for ZL3 and four for ZL4. Also noted were H44GP, 3D2CM, FK1RF, FK1TK, FK1TD, FK8EM, FK8P, FK8AX, P29BWH, P29QAO, YJBRG, ZMBOY, VK9LC, VK9LM and VK9ZB, a total of 15 stations in the Pacific areas.

The VK5LP log comprises more than 400 contacts on 25 days between 1/12 and 15/1 on 52, 144 and 432 MHz. Areas contacted include VK1 to 8, VK9LC, VK9LM, VK9ZB, ZMBOY, FK1, FK8, YJ8, H44, P29 and ZL1 to ZL4, all on six metres. On two metres areas included VK2, VK3, VK4, VK5, VK6 and VK8, with VK7 heard but unable to make contact. I did miss out on ZL1BHX on 15/1 but hopefully there will be another time, and I see no reason why 1986 should be much altered for Es contacts from 1985.

It appears to have been a year when VK6 has not been able to share in the very high degree of activity. They appear to have missed out on Es contacts on two metres all the other states have been sharing, and there is a suggestion they may have missed out on some of the six metre activity. One of their problems, due to isolation, is that when signals are so strong from such a vast area of the eastern States the VK6 stations also need to be very strong to be heard through the mass of signals from some hundreds of stations all using the band at the same time and largely congregated in the first 100 kHz or so. Also, with so much two metre activity the need to make sure of the beam heading for two metres, and with most antennas on the same mast, it seems logical to expect eastern States antennas would be turned less to VK6 this year than normally, hence a drop-off in contacts for them. So while we may all be saying what a great year it has been, those in VK6 may not necessarily agree.

The accompanying map may give some idea of the spread of two metre activity. It is rather hard to convey a total picture with only black and white, but the map covers the period from 26th December 1985 to 5th January 1986, with the following details: 26/12: VK2 to VK3, 5, 7; 27/12: VK2 to VK7, VK3 to VK5; 28/12: VK1 to 2, 3, 4, 5, 7; 29/12: VK5 to VK1, 2, 3, 4, 5, 7, 8; 30/12: VK5 to VK3, VK8 to VK3; 31/12: VK5 to VK1; 1/1: VK4 to VK1; 2/1: VK5 to VK2, 3, 4, VK2 to VK4, 5, 8, VK8 to VK2, 4; 5/1 VK5 to VK2, 3 and VK8 to VK3. Since then on 9/1 VK8 to VK4. Scattered amongst these contact were others between New Zealand and VK1, 2, 3, 4, 7 and VK5 heard, all almost on a daily basis. It took many years to finally open up VK8, firstly to VK5LP and VK5R0 on 16/12 and this probably whetted the appetite of the VK6s. On 29/12 Peter VK8ZLX worked eight VK5s and 24 VK3s; on 30/12 he worked six in VK3, and on 5/1 he worked a further nine in VK3. Then to cap the VK effort, Neil VK8ZCU, in Tennant Creek, worked Mick VK5ZDR and Jim VK5ZMJ on 7/1.

HIGHLIGHTS AND HAPPENINGS

I do not propose to give a blow by blow description of what has occurred during the six weeks, to the middle of January, all those operating on six

metres will be well aware of the widespread openings on both six and two metres, and for every contact which may be mentioned, there will be ten others equally of note. Instead of masses of call signs this time here are some of the more important events as I saw them or were passed on to me by others. My note book runs to more than 15 pages!

At the beginning of December, Ron YJBRG put in an appearance and he was to feature in many contacts. Also, VK9ZB on Willis Island became known and on 4/1 ZL2TPY worked VK2 and VK4 on two metres. 7/12 was a day for beacons, VK2RSY, VK2RGB, VK2RHH, VK4RTL, VK7R, VK7RN, and a couple of ZL beacons, all on six metres. The VK5LP log book for that day shows contacts to YJ8, VK9ZB, VK1, 2, 3, 4, 5, 6, 7, 8, ZL1 and ZL2. Quite a day, perhaps foretelling of days to come! Gordon VK5KSA reported hearing the VK0MA beacon peaking to S9 during the afternoon, a report also came along saying it had been heard in VK2. Mark VK0AQ confirmed the beacon was running at the time. ZLB0Y was off to the Kermades and would soon be ZMBOY and operational on six metres.

On 8/12 VK4ALM carried a report that ZLB0Y had already been heard in FK8 at 2230 UTC. We also learned that VK9ZB would be QRT from 10/12. Next we heard that FK1TK had already copied ZMBOY on CW at 2200. Lionel VK3NM was off to New Zealand with six metre gear from 22/12 to 18/1; P29BWH heard for the first time, and VK3ZB worked VK4 on two metres. First reports of JA sounding signals heard by VK5FT and VK2GP about 52.460MHz, subsequently suggested they were intruding operators from fishing vessels to the north of Australia. VK4HK worked ZL1 and ZL2 on 11/12. Mick VK5ZDR worked ZL2TCK at 1045 on 14/12. This was to be the start of an avalanche of ZLs this season. On 15/12 open to ZL1, 2, YJ8, ZMBOY, VK2BHO reported that it was open to ZL most of the day.

The 16/12 was another great day, which started off early at 2247 with ZL1ADP, then VK2KAY who reported FK8s were hearing VK2, 3 and 5 and ZL, and said he had worked ZMBOY on 10/12. As the day progressed, VK8 came in with VK6ZLX and VK8BLF S9+, then VK4 who were followed by YJBRG, then more VK4s and then back to VK8. It was this latter recall which prompted VK5RO to try two metres with Alice Springs, culminating in both he and VK5LP working VK8GF to us WAs on two metres — *at last!* By now, the VK5LP log book was starting to look good! Next came VK2s, then short skip VK3s, back to VK4, then VK2, over to VK6, back to VK2, more VK3s, then YJBRG again, next VK4 and VK2, then Chris ZMBOY called me for a desperately needed first VK5 contact. I was happy to oblige! At the time (0715) he was 5x5 but, shortly after he was 5x9. So that was a new country. More VK2, VK1 and a couple of ZLs to finish a good day!

ZL was open for one and a quarter hours to VK2 up to 0615 and VK2ZMG and VK2YL worked ZL1BHX on two metres. Others to work ZL on two included VK2BA, VK2KJ, VK2ZQA. At 0800, a report was received that ZL had worked FK on two metres.

17/12 was another good day starting up. ZLs were in before the end of the UTC day. ZL2CD worked VK1 to 8 inclusive! At VK5LP before 0800 ZL1 to 4 had been worked plus VK2, VK4 and VK4ABP had been heard on two metres. At 0656, ZL2TPY worked FK8EM and three others on two metres, VK1 to ZL on two and VK7ZKJ grabbed four ZLs, also on two, and was also heard on 70cm. Greg VK7KJ reported bursts of ZL1 and ZL3 up to S5 on 70cm. ZL2TAS reported hearing VK5NC at Mount Gambier two at 0800, but only for five seconds! While ZL2TPY was working FK8 on two ZL1BHX was working VK4 on two. At 1023, ZL1TZA was involved in a marathon between VK1, VK7 and VK8ZLX at the same time.

On 18/12, ZL VK2 got the day going on 144.100MHz. Then Chris ZMBOY came on. Plenty of VK2s, in strong fact that we tried two metres and VK5LP worked VK2XDH and heard VK2KAY and VK2AKU. 20/12 started off with VK2 and VK4 leading up to working VK9LC on Norfolk Island at 0353 with signals to 5x9, despite Nev only being able to operate from his hotel room with 10 watts and a 1/4 wave whip! A few short skip VK3s, more

VK2s and 4s to end the day. 22/12, had to be content with VK6ZWH 5x6 at 0436, and a report from VK4KAL that the group of people around him, VK4LE, VK4AGQ and VK4LC all worked ZL on 5/12 on two metres which they considered to be as far inland that ZLs had probably been heard. VK4ZWH worked FK8 at mid-day.

23/12 and things started early, VK9LC worked at 0041 to 5x9, short skip to VK3AFN at 0313 5x9, ZL2s around 0340 then VK2, ZLs were now working FK8 frequently on six. JA fishing vessels down as low as 52.250MHz and interfering with the ZL beacon. 0900 FK8EM. Heard Les VK3ZBJ on 144.100 around 2300 working VK5DK. 24/12 was a bit quiet except for VK9LC, ZL4TBIN3, VK6BEE, then VK2 and 4. 25/12 Christmas Day and I am getting ready for my portable expedition at Meningen, 100km south east of Adelaide, but noted VK5LC was in again as was ZL1, 2 and 3.

26/12 — Set-up camp at Meningen on top of a good rise, and what a pleasure to get away from power line noise, motor cars, etc. Now within range of VK3 for more 144 and 432MHz contacts. On six VK2, 3, 4, 8, and ZL were worked. P29BPL Beacon heard on 50.013, and I was able to check the frequency. ZL to VK4 on two.

Felt sure that 27/12 was going to be a good day, ZLs pouring in before 2300, with ZL1 to 4 worked, then VK7NC at 0100, VK3DQJ working VK2 and VK4 on two metres. A VK4 reported ZL had been heard in VK1, ZL1BHX to VK4GK and VK4ZAZ on two. VK5RO reported copying CW from FK8EM on two metres at 2205 for about one minute to SS. VK5ZDR worked VK4ZWH on two at 5x9. VK6EM at 2238 on six metres. VK2AKU to VK7ZAR on two, also to VK5DK. VK3AO3 worked FK8EM and VK9LC. In between all this many contacts were fitted-in on 144 and 432MHz to south eastern VK5 and into VK3 from Meningen.

If yesterday was a good day, then 28/12 looked even better. Lots of short skip from VK5 and VK3 on six, and many contacts on 144 and 432 to both areas. At 0038, worked P29B. Then followed VK1, 2, 4 and 8. But the day seemed to peter out a bit and the great expectations were not realised!

However, 29/12 made up for the day before. At 2322, VK4LE on 144.100, VK5NC worked VK4ABP and VK4YJH around 0015. VK2AKU worked VK7 on two. Around 0300, the two metre band went mad, with VK8GF, VK6ZLX, VK6TM worked by VK5NC to 5x7 and continuing until 0400. At 0422, Trevor worked VK4RR on 144 at 5x4 from near Townsville, then followed a whole heap of VK3s, plus VK7JG (0819) and it was still going at 1133. VK5NC worked VK7DC on 144 and 432MHz. This was the day he and Colin VK5DK worked VK2, 3, 4, 5, 7 and 8 on two metres! VK2AKU worked VK5ZJM and a string of VK7s on two. VK2RX had quite a day too by working a series of mobile stations in FK1 and FK8 on his hand-held FM rig on 144.100! There were up to five FK stations on at once with signals to 5x9 and running 10 watts. VK2O reported working VK1 to 9 and ZL1 to 4 plus P29. The two metre opening to VK8 also involved VK5MC, VK5DJ and VK5XAV, who also worked VK4ABP on two. VK4ABP reported working eleven VK5s on two. VK3UM, as well as 144, tried 432MHz with VK8GF, but no results. VK6GB will be leaving Darwin to reside in Canberra this month. VK8TM worked VK7JG on two. VK9LM will replace VK9LC on Norfolk.

30/12 — After such an incredible day yesterday, today must be quieter, but will it be? At 2335 there is VK9LC at 5x9. Then VK6KXW 5x9. He said yesterday was not very good in VK6, a few VK6s late in the day! VK6KXH at 0028, then to VK4 followed by FK8EM at 00106 and FK1TD at 0142. Then some ZLs, then VK8ZCU at Tennant Creek who reported not working anyone on two metres, but had heard VK4XXX for one-way only.

However VK8TM, at Alice Springs, worked VK7JG on two. It seems the Alice Springs boys were sharing the first contacts. VK8GF was the first to work a VK5, VK8ZLX the first to work a VK3 and VK9TM the first VK7. Nice to be friends, isn't it? ZL2TPY heard FK8 on two metres during the day. FK8EM reported 23 VK2s had been worked on two metres by FK stations. ZL1BHX apparently worked 3D2CM on 29/12 and Radio Suva on 100MHz was heard in ZL at the same time. VK2BKL worked nine FKS on two metres. Included was the first mobile to mobile contact.

The FM hand-held read the stations to 5x9 at 0000UTC. Gordon VK4WF running two watts to a two element beam was 5x9 here at 0523. YJ8RG in also. Report from VK6HK that a Perth SWL had received television from Samoa 2ZLs around 0700.

31/12 and a little quieter today, but VK8GF, VK8KTM and VK8KTM all in around 0130 at 5x9. At 0230, ZLs started with ZL2TPY 5x9. Then over to VK2KLX 5x9 at 0243 and followed by VK9LM 5x8, at 0254. Then worked my old friends Lance on VK4ZAZ at 0434 and Hughes VK5BC at Berrie at 0446. More VK2s and 4s leading up to VK6HK at 0655. Heard that VK2OF had worked Andy VK6OX at Carnarvon, you can't get much farther than that across Australia. YJ8RG again, more ZLs. VK9ZCU at Tennant Creek tried two metres with VK4FXX and VK3AMK, but to no avail. VK7G reported on 27/12 he had a ball on two metres by working six VK2s and six VK4s. Also reported he would be going to Norfolk Island for five days from 29th January 1986 and would have six metres mobile. VK5UG travelling across the Nullarbor from Perth was hearing Melbourne FM on a 1/4 wave whip on his hand-held. Andrew VK3KJH and others were entrenched on Mount William with 144, 432, 1296 FM and CW, 2304 and 3456MHz CW and would be trying to extend the present record on 3.5GHz.

As a new year dawns (1st January 1986), VK5LP is still portable at Meningie and loath to leave such a good site! VK4FFX in at 0019, then VK8ZLX at 0042, two metres to VK5NC and some VK3s. At 0151, VK6BA and VK6AOM, then VK4s, more VK8s. Had more than 40 contacts today, many of them on 144 and 432MHz to VK3.

The 2/1 sees VK5LP packing up to go home after a wonderful week at Meningie. VK2AKU worked VK4ABP at Longreach at 0750, followed a few minutes later by VK8ZLX, VK8KTM and VK8KTM, all on two metres. VK5DK worked VK4AU, VK4TN, VK2DDG, VK4AGQ, VK2KAY, plus eight VK3s, all on two metres starting at 0820. 3/1 and 4/1 — usually VK2s and 4s plus a few ZLs and VK6ZMA and VK6ZLX, never a day without VK8s.

5/1 — started off with VK8ZCU and VK8ZLX around 0130, VK7ZIF at 0211, VK2 and VK1 at 0300, later VK4ABP. VK5DK worked VK2ZJK and VK2KAY on two at 0400, then VK9LM at 0500 on six. This was immediately followed by YJ8RG. VK2s were working FK8s during the morning. On 6/1, the usual VK8s and 4s. On 7/1, Mick VK5ZD and Jim VK5ZCU were both rather pleased to work Neil VK8ZCU on two metres, being their first VK8. They had missed the previous openings and they were the only two stations Neil actually worked on two metres for the season. The day started with VK8s again, then VK7JG at 0930, a long short skip opening to VK3 with a dozen or more stations worked on six between 1000 and 1100. At 1113, VK5NC was 5x9 on two, and 5x5 on 432 and VK5DK was 5x8 on 432MHz. At 1151, VK8ZLX was still in. Jim VK3AZY worked Townsville on two while Gil VK3AII had to be content working Rockhampton on two. ZL2TPY reported more than 800 QSOs on six and two metres and had worked VK1, 2, 3 and 4 on two, also that JA1VOK had heard Channel 0 on that day from 0400 until 0600. FK8s were hearing weak JA signals on both 50 and 52MHz. ZL8OY heard 2900 running a kenwood. Jim VK7JG reported he had VK7ZIF, VK8ZCU and VK7JG on 28, 29 and 31/12 had worked about 40 stations on two metres in VK1, 2, 4 and ZL. Quide a good score.

8/1 — VK3s working VK4ZWW, VK4YJH and VK4WF on two metres at 0846. The next day or two were quiet with VK8, 4 and 2, plus some ZLs. 14/1 turned out to be another good one with VK5s to try two metres to them with the results reported earlier when five stations worked ZL1BHZ, around 0800. At the same time, VK7s were very strong on six, and there were many VK3s on short skip to S9+, which indicated a high MUF. ZLs continued to be around until after 1000UTC, also VK2 and 7. VK2 also worked FK8 on two that same day. VK5RO also reported FK8 and YJ8 this day.

More short skip on six to VK3 on 15/1 but no two metres! ZL1SW (Lionel VK3NM on holidays) was at 1009, then many more VK3s at 5x9. Les

VK3ZBJ reported 8050 points scored for the Ross Hull Contest, and went on to say, possibly with tongue-in-cheek though, that on 1/1 during the big strong opening to VK6ZCU, Neil mentioned he had 10GHz equipment, but no one to work. As Les also had similar equipment, he suggested a contact be attempted, which they did but with no results! Les said at least this was probably the first attempt at a contact between VK3 and VK8 on 10GHz! VK3YTT worked ZL1BHX on FM on 50.015 at 0930. Four stations on from Alice Springs.

Here endeth this part of the epistle! Maybe it is a long bit, but it could have been much longer, 15 pages of notes condensed into two or three columns. I know there will have been many unreported interesting happenings which will eventually surface, but I cannot be everywhere at once and unless I listen all the time and make many more telephone calls and do no operating, then some points will be missed, but overall the above does give a general portrayal of what happened on six and two metres during the Es season of 1985/86, a truly outstanding year and one which will take beating. But I see no reason not to predict that it will be somewhat similar for the 1986 season, as we will still be in the low part of the cycle.

One last item to hand, Col VK5RO on 14/1, following the ZL contact on two metres was involved on six metres in a round-table with ZL1BHX, VK2RXX and VK3YTT at 0930, when another station signing W1-25 broke in and added some comments! He left soon after without really establishing who he was, but as they were all on FM Col wondered if he was a CBer trying his hand at six metres!

CERTIFICATES

Following all the happenings on two metres during the past month, it seems very likely there will be quite a few people now having Worked All States on two metres, so the Awards Manager could be busy. The first one went to Steve VK4ZSH a couple of years ago following his wanderings around Queensland where he worked a number of areas. Col VK5RO got number two by himself; delivering his QSLs and beating my posted QSLs, henceforth VK5LP has number three, and Ken Jewell VK3AKK is number four. The Worked All VK Call Areas portion of this award may be much harder to achieve as it will require VK9 and VK0, the latter possibly being very difficult to achieve, but with Macquarie Island offering the best hope, we need an operator down there with enough interest in two metres.

TESTS ON 10GHz

Recent news of 10GHz operation in VK3 has prompted the old firm of VK2BDN and VK2ZAC to dust off their portable crystal controlled gear and venture out in the mid-summer sun.

On Sunday, 29th December 1985, Bill VK2ZAC and Dave VK2AT, travelled to Mount Gibraltar at Mittagong; Dick VK2BDN, with Geoff VK2ZQC found their way to Tumut Down Dick, a high point in the Terry Hills area. The path selected had previously been worked by Des VK2AHC in setting a State 10GHz record and the object of the latest tests were to determine the ease with which the path could be worked. Also, the margin of signal-over-noise with the present equipment.

A two metre liaison channel was used with ground plane antennas at both ends and no difficulty was experienced in establishing initial contact. Using survey maps and compass bearings, 10GHz contact was established at 10am local and maintained for some 40 minutes. After alignment of the antennas, signals were maintained 30dB above the noise threshold with no QSOs.

Equipment used was the same at both ends and consisted of:

- TRANSMITTER: 144MHz exciter and varactor multiplier to 1152MHz step recovery diode x 9 multiplier to 10.368GHz. Power output 20mW. Modulation NBFM.

ANTENNA: 40cm (16") paraboloid and waveguide feed, measured gain 2dB.

RECEIVER: Front end diode balanced mixer.

First IF at 49MHz, second 15MHz and third 1.5MHz. Fourth IF at 455kHz.

PATH DETAILS: Path length 115km (72 miles). Path loss (free space) 154dB. Signal clearance — the path is clear using earth radius. The only features close to the path occur at Pymbly and Top Ryde.

Following the opening contact VK2BDN/VK2ZQC investigated the country towards Corromah Heights. This area proved to be obstructed by an east/west ridge at Terry Hills. As very poor two metre signals were encountered, no further 10GHz tests were set up.

Plans are in hand to try some new paths during the holiday break to again put VK3 on the map!

Thanks to Bill VK2ZAC, who sent in the information and we look forward to hearing further on the exploits of this intrepid gang!

QUEENSLAND

Bill VK4LC writes that up to mid-December he had worked quite a few ZLs on two metres. On 5/12 worked eight ZLs with signals to S9+ and on 16/12 worked seven in ZL1 and one ZL3. Time for all these contacts between 0600 and 0700.

Bill reports his QTH, at Eagle Heights is 609m (2000 feet) ASL, with a clear take-off in all directions and in particular to New Zealand. This results in the slightly embarrassing position of having to work through pile-ups of ZLs on 144.100MHz! (Personally, I think it is an embarrassment I could well stand... SLP)

Bill operates regularly on OSCAR-10 and the best QSO recently was with TR8JLD of the West Coast of Africa. He has also just received his WAC for SSB on OSCAR-10. The antenna system on 144 is four by 15 elements and 432 is two 19 elements, both arrays at 15m (50 feet). Equipment is an IC-271H and 471H with pre-amps, but no linear.

WESTERN AUSTRALIA

Peter VK6KWW, sent a short report on his six metre activity. On 8/12 he worked FKBEM 5x3 both ways. On 17/12 worked three ZL1s, five ZL2s and two ZL3s between 0549 and 0739. On 24/12 worked two ZL1s, five ZL2s, three ZL3s between 0736 and 0918. At 1022, worked VK9LC at Norfolk Island, 5x4 out and 5x8 in. On 30/12, VK9LC at 2326 and on 1/1 VK9LM at 0211.

Peter also mentioned the 1st January was a day of intense Es and reports 10-15 minutes of two metres between Phil VK6ZKO and VK5ZAR, 5x5 both ways on 144.100MHz at 0341. Later in the day, the band opened on six to VK8, northern VK4 and P929Q.

In the event that there is some relaxation of the rules in regard to the use of 50MHz now that Channel 0 in Melbourne and Sydney have gone, Peter advocates greater usage of the 50MHz end of the band to put us in the same area as other parts of the world but conforming to the standards and frequencies already in use by other areas. I am in general agreement with this, but would rather defer comment until something definite appears on the books. In the meantime, the other relevant points he has raised on this matter have been filed away until the appropriate time.

GENERAL NEWS

CQ ham radio from Japan, per courtesy of VK6RQ, mentions reception of a Russian AM radio station on 50.610MHz, on 28th July 1985, and again on 13th August 1985. Areas worked in their summer Es season (our winter) included HIL, HL1, VS6, BY5, BY4, HL4, HL2, and then on 23/10 P29PL and VK6XO.

That will have to do for this month. Some other items, mainly from publications, is on hand but will be carried over until next month. But remember, it is always a possibility that long distance DX may occur suddenly, and without warning during March and April on six metres, so you should be vigilant and look out across the Pacific.

Let us hope the remainder of January treated us well with contacts, perhaps they will not be as frequent as in December, but good nevertheless. Also, it is not uncommon to have good contacts between Melbourne/Adelaide to Albany around the end of January/early February. Next writing will tell you if it happened.

Closing with the thought for the month: "People's minds are like parachutes. To function properly they must first be open". 73. The Voice in the Hills.



How's DX?

Ken McLachlan VK3AH
Box 39, Mooroolbark, Vic. 3139

DX in the doldrums? No it is still there if one cares to listen and call at frequent intervals on even 10 metres, but it is essential to call and establish a contact, from thereon-in it is like a mini-DXpedition if ones timing is correct.

This column would be interested in running a segment entitled 'My most unusual QSO'. We have all had some unusual, humorous and, although we may not admit it, rather embarrassing QSOs from time to time, so why not share your most unusual one with the readers of this column?

The conditions are simple; entries must be authentic and actual QSOs that have occurred to the writer during his or her amateur career but keep it to about 200 words. How about if ladies and gentlemen? Whether it happened half a century ago or last week, do not keep it secret any longer!

Selected entries will be published when space permits.

GRENADA

A vacation DXpedition was to be taken by Bill K4LTA, and other amateurs and their families from the middle of last month until the 5th of this month. At the time of writing they hoped to acquire the call J38A, but as their hopes may not have come to fruition you may have to look for their home calls J3/J. You might even hear them signing J34LTA.

The calls of the participating operators, other than Bill are; N4FKC, WABFSX, N4MMV, NFSZ, KOOSN, N4KOV, W5PWG and N6LHN.

SAO TOME

Luiz S92LB, is still quite active but with poor propagation to VK, particularly in the eastern states, his signals are swamped by QRM.

One VK in the western state of this vast country, didn't believe his luck when he worked Sal S90AS, a visitor to this much wanted country. Sal's home call is IT9AZS, and he was visiting en route to Togo and Benin on business in January. Sal hoped to obtain operating privileges in these countries. For all operations QSL to the home call.

ETHIOPIA AND DJIBOUTI

An operation from ET and J2 is hopefully planned by Jacques V41ZZ, in the near future. Unfortunately, I feel that it would be very risky and may not eventuate due to the present problems in this area.

ANOTHER ISLAND — ANOTHER COUNTRY ?

According to the media, a small island has emerged near two Jima in the Pacific Ocean.

A Japanese Maritime Self-Defence Force ship, the TAKUYA confirmed that it had appeared and was blasting rocks high into the sky. It appears to be about 700 metres long and 200 to 300 metres wide, having a height of about 15 metres. If there are any volunteers to operate from this area, if and when it cools down, will it pass the ARRL DXCC criteria for a new country?

PETER 1 ISLAND AGAIN

Bob KD7PT, states that he is making plans to operate from this one late in the year, whilst en route to the Antarctic. He is seeking landing permission and other necessary documentation. If it comes off he will be travelling south with the Coast Guard.

It is a long way off, but all DXers hope that Bob will be successful in his endeavours.

THE 'GLOBETROTTING' COLVIN'S STORY

Iris, Lloyd and gang made some 5 000 contacts to 137 different countries from Lesotho. Next they were moving on to the Kingdom of Swaziland where they hoped to gain visas and operating permission to visit Mozambique.

They have been very successful in the use of satellites and have had 400 QSOs with 40 different countries.



Photograph courtesy of Heather Pike VK2HD

Iris W6OL, at the Wind Hoek Radio Club in Namibia, South-West Africa. Iris was giving a talk about the 160 countries that they have visited and operated from.

NEWS FROM GUAM

Ed, formerly KB6DAW/KH2, is now sporting the call, AH2BE. Ed has written about his trip to Wake Island during October last year, in which he made 6 200 contacts to 122 countries, all of the US states and 36 Zones in seven days of operating. Not a bad effort Ed, considering your long call sign and the poor propagation into Europe.

Ed's trip coincided with the 50th Anniversary of the first China Clipper flights from USA to the Far East and amateur radio in the area, so there were many celebrations to attend.

Ed flew in on a military aircraft and after being met by the Communications Officer and a representative of the station Commander, was taken to his room where he changed out of uniform and was on-air within an hour. His first contact was HC8E. The equipment varied but was mainly a FT-101B, lent by KC6CRM, and a TS-830S which had some receiver problems. In all it was a lot of fun and Ed hopes to do it again this year.

He notes his gratitude to a number of people and organisations for donations and assistance including amateurs P29JS, AH8AC, WH9AAD, NK6T, KC9RM and the military personnel on the base for their help and consideration.



Ed AH2BE, ex KB6DAW/KH2/KH9.

Those who worked Ed and have not requested a card should do so promptly, as he will be tripping off to visit his father-in-law 8P6JQ, and hopes to get an 8P9 call allocated to him during his visit. He will then move on to a long posting in HL land, where he has requested the call HL9MM.

Good luck Ed, an enjoyable holiday and good DXing in the future. . .(VK3AH).



Ed's antenna on Guam.

AMATEURS HONOURED

Dave W6AQ, a keen DXer, was honoured in last years television Emmy Awards. Dave's production of "Do You Remember Love", a television-movie about a lady suffering from Alzheimer's disease, was nominated and won! Congratulations Dave.

Other amateurs were also mentioned in the same Emmy Awards. The Los Angeles television station, KTTV, took four coveted awards for its daily newscast. The station, thrilled by such a scoop, took a two page advertisement in Variety, (an industry daily newspaper) and publicly thanked all the contributors to their success. Amongst those mentioned were Mert N6AWE, Dave N6DKI, Bert WB6MQV, Don WB7ADU, Howard WA6UFM, Bill WA6GIT; Charles WB6SKM and Sudcock WB6DFD. Amateurs have many talents, some yet untapped and really one never knows who the person is on the other end of the QSO.

DIFFICULTIES!

One OT writing to me on a different subject states that when he built his QTH a quarter of a century ago, he had problems getting the power and water connected, now he is surrounded by 33KV lines, without mentioning the 415 and 240 volt feeders and associated transformers. To add to his QRM generators outside his QTH, a number of two and three storey homes have been built in close proximity. As if the RF attenuation caused by these is not enough, he is confronted with burglar alarms being installed on these premises which are connected with many metres of unshielded wire. These act as excellent antennas and a little

RF from the amateur frequencies actuate them nicely.

This gentleman still operates quite happily on mainly CW and puts his problems down to ~~process~~.

The story reminds me of another amateur who recently sold his QTH with all modern conveniences to move to an area in the 'never never'. The new location will allow him and his family to commute daily to their business and school commitments. To get electricity connected, the cost was to be in the vicinity of \$100 000, which he was not too happy about so now he is installing Solar cells to do the job of running the home and of course the transceiver. No power or water, but progress!

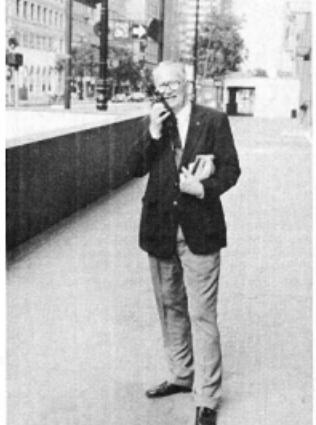
TURKEY

A number of amateurs seem to be quite active from this area and it appears that QSLs are being returned quite promptly.



One of the more active TAs is Aziz TATE, pictured with his FT707 which runs into a dipole.

ON ANOTHER BAND



Well known DXer Steve W6KDK, pictured using two metres whilst out shopping in San

INDIA

The newer frequencies that have been allocated are 1.820-1.860, 3.500-3.900 MHz plus the 18 and 24 MHz WARC bands. Activity is high and Gopal VU2GDC, has erected a 160 metre antenna and has an 80 metre beam under construction.

Gopal's neighbours, the OM/XYL team of Vidy VU2DVP and Chitra VU2CVP have been using two element phased Yagi beams on 40 metres with good results.

Rajiv VU2RG, Prime Minister of India, during a recent visit to JA, accepted an offer of an additional loan of thirty billion Yen for co-operation in science and technology. I am sure our hobby will advance dramatically in this country in the next decade.

CONGRATULATIONS

Congratulations are extended to Dimtar VK2APK, for winning the 14MHz Section Trophy in the 1984 CQ CW WW DX Contest. The multi operator station of VI3WI gained 359 388 points with the help of VK2s EFJ, KFQ, 3BPW, VK3CWB and VK3DWN.

It is interesting to note that Mike VK6HD's score of 5 363 on the 160 metre band in 1983 still stands as the highest score for Oceania. Thanks to all who participated in flying the VK "flag".

It is also nice to see the calls of VK9NS, VK6HD and VK3QI who have achieved their Five Band Worked All Zones accreditation which is by no means an easy certificate to win. Congratulations on your tenacity in this achievement.

BBXCC

Armas OH2NB, who recently celebrated his 80th birthday, also received his Five Band DXCC Certificate on the same day, the second time in his lifetime. His first was under the call CT1BCM.

Armas is Honorary President of the Finnish Radio Society. This position is not new to him as, in 1968, he held the similar position with the SRAL.

-PROPAGATION
his weekly publica-

See KIRK, in his weekly publication, **THE SUNSPOT REPORTS**, gives the predicted smoothed monthly Sunspot values until June this year. The first figure is the Classical Method Value, the second is the SIDC adjusted value; January = 10/0; February = 9/0; March = 8/0; April = 7/0; May = 6/0 and June = 5/0.

Not good news really, but there is good DX about. Lee finishes his weekly report by quoting: 'Ever notice — No matter what the results, there is always someone eager to misinterpret it'. How

BITS AND PIECES

BITS AND PIECES

Watch for FRT/AV1 from Tromelin Island this month he hopes to activate the area before leaving on the 31st of this month. Aruba will gain new country status until it has gained full independence. PA/Pa0FM is QRV from the area for the next couple of months and frequents around 14.170MHz. Jim VR6JZ is QRT and has returned home. ZL8VOY, very active from Raui Island in the Kermadec group. The bands dead? Not in Europe evidently. G4DYO has worked 35 Zones in the period from 1st to 14th January. He only needs Zones 1, 6, 19, 31 and 34 for WAZI. A number of stations signing ... /C9, apparently without the paperwork the ARRL DXCC requires. Quite a pity as many VFs need this area. Apparently LASJEA is operating from an oil platform and not an island. Co-ordinates are 58 degrees 11 minutes N and 02 degrees 22 minutes E. John OHU1T and Martin OH2BH, operating CT3BZ, were quite busy with QSOs as these notes were being written. QSL to OH2BH. A35WZ was operated by NK7K, QSL via NE7W. Norbet and Judith, DF6FK/KH8 and DL2ZAD/KH8 respectively, were kept to a steady pace. Both have held VHF contests. Watch for VU100CC and VU100CC. These special calls are to celebrate a century of independence. Anyone awaiting or wanting a card for 4X37ID should QSL via 4Z4DX. This call was used to celebrate the 37th Independence Day of Israel. This year the call will be 4X38ID. The voice behind the microphone of the call J5U2AG is YIU1AII. He is installing a commercial broadcast

Cards for TV636, the station commemorating the Lions Club International Forum in Paris should be sent to FBQ8. "Did you work CPJ/FI and never received an answer? He is now PT2AZ and still has the logs." Tom Christian VR6TC, now has the telephone connected. Overseas calls are routed through New Zealand. As the only one on the island with this facility, he should not be too hard to track down. The call sign ZF9 will be used. The primary prefix of ZF9 will be used. Cayman Brac VY2EZ states that ICRS are not yet officially recognised by the postal authorities in Anguilla. I'll bet green stamps are though! "Gerry SX5XG is a Russian Orthodox Priest as well as being a medic. His wife is a teacher." Albania has an amateur radio system, but not on allocated IARU frequencies. It may not be long before we can expect legitimate operations, but it will take time to verify. "RRA4HA helps conduct an Oblastnet around 14.180MHz generally at 1800UTC." The station YE3C was being used to commemorate 40 years of Army communications in Indonesia.

THANKS

Sincers thanks are extended to the following: The Editors of weekly, bi-weekly and monthly newsletters including THE ARRL NEWSLETTER, BARG, CG-QSO, DX FAMILY FOUNDATION NEWSLETTER, JAN and JAY O'BRIEN'S QSL MANAGER LIST, KH6HZP REPORTS, LONG ISLAND DX BULLETIN, KDX, RSGN DX NEWS and THE WEST AKADE AMATEUR RADIO CLUB NEWSLETTER. Many thanks including BREAKIN', ION, CGDX, ELECTRAN, JA-CQ, JARL NEWS, KARL NEWS, KARL'S QSL, RADCOM, THE SHORT WAVE MAGAZINE, VERON and WORLD RADIO.

Members who have contributed include VRS ZHD, FS, EBA, 3FR, YJ, YL, AUI, 4AIX, SHD, NE and G3NBC. Overseas amateurs include AH2BE, G1EOD, H16LC, KB6QAW/KH2, OE2DYL, ON7WW, WB6GJU and ZL1AMM. Thanks to one and all who make this column possible.

**21 HS YOU MAY NEED
PENNIES**

3D26BU PO Box 64, Manzini, Swaziland.
4V2C PO Box 1404, Port Au Prince, Haiti.
SD25ZHHN Hassan Zourehine, PO Box 293, Kan, Nigeria.
BH9RHK PO Box 634, Kathmandu, Nepal.
AAXZF PO Box 987, Manas, Oman.
VY1JA PO Box 2213, Kazakhstan, Tashwan.
YY4AO PO Box 38, Guizhong, Chengdu.

BY8AOM PO Box 227, Shangri.
CE02IG PO Box 1000, Easter Island via Chile.
CESHOP Casilla Correo 110, Punto Arenas, Chile.
CP5LE Barbara Grebenstein, PO Box 2268, Coquimbo.

CV0U PO Box 2065, Montevideo, Uruguay.
CX2CS PO Box 2065, Montevideo, Uruguay.
4L4HL PO Box 1312, Santiago 21.
X01E

F6EWK BP 14, 93190 Lirigny Garigan, France.
FT8XC 3 Rue Victor Boucher, 78440, Forge Les Eaux, France.

PT2AZ Luz Camargo, SGS 210, Bloco A, AP 201, 70273, Brasilia D.F. Brazil.

S7CW PO Box 4, Mahe, Seychelles.
SV8PR PO Box 1325, GR-7111 Iraklion, Crete, Greece.

T32AN PO Box 667, Alain, Hawaii 96781, USA.
TA1A PO Box 787, Istanbul, Turkey.
TA1C PO Box 169, Istanbul, Turkey.
TA1D PO Box 1167, Istanbul, Turkey.
TA1E Ata Selvi, PO Box 794, Istanbul, Turkey.
TA1F PO Box 33, San Jose, Costa Rica.
TI2YI PO Box 320, Santa Jose, 20770, Costa Rica.
TR8PA PO Box 2284, Liberia, Gabon.
TR8SA PO Box 16, Mouanana, Gabon.
TZ2PAW PO Box 120, Bamako, Mali.
VISIVY PO Box 937, Port Lincoln, SA, 5606, Australia.

Y3EC Box 187, Surabaya, Indonesia.
YU2MHI Box 9323, Bulgaria.
HK3

LZ8OY Key Hannington, The Terrace, Warrington, Cheshire, New Zealand.

Note: Add Peoples Republic of China to all BY addresses.



Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868



Martin Aimee FK8FA.

VK3BJB. Also, welcome back to Candy VK4NES, who has re-joined.

YL ACTIVITY DAY

With some increase in propagation of late, it may pay to check the bands on YL Activity Day — the sixth of every month. Listen on the UTC hour. The most popular time seems to be from about 0400UTC on 14.288MHz.

It is a good opportunity for the YLs to get together and have a natter.

33

Most OMs and some YLs are unsure of the meaning of "33", when signing-off. 33 was originated by Clara W2RUF, now a silent key, and was adopted by the American Young Ladies Radio League for exclusive YL use. It means "Friendship between one YL and another YL". It should be used only in the singular, never plural.

Well, that is all for this month. Until next month, good DX and take care.

33/73 JY AR

AUSSAT & TETIA

AUSSAT is Australia's National Satellite System. During 1985, two satellites were launched via the NASA Space Shuttle and are fully operational as of the end of last month.

The Electronic Technician's Institute of Australia (TETIA), Victorian Division, announces that it has arranged for a representative from AUSSAT Pty Ltd to address its March General Meeting to present a technical presentation and update on this new era in space-age technology.

The meeting will be held at the National Mutual Theatre, 447 Collins Street, Melbourne on Wednesday, 19 March 1986, commencing at 8.00pm.

For further information contact the secretary, Don Browning on (03) 819 1311.

The TETIA was founded in 1956 to promote and represent the professional aspects of television and electronic technicians and has Divisions in all states.

The first Australian telegraph was opened between Melbourne and Williamstown in 1854. By 1857, Melbourne, Sydney and Adelaide were linked, with the service extending to Western Australia, Queensland and Britain in 1860.

8Q7CE:DL9GBS, 8Q7CG:15JHW, 8Q7CK:12CRG,
8Q7CQ:15JHW, 8Q7GW:W9GW, 8Q7RM:JEMXMO,
8Q7YL:JA1AEQ, 8R1L:DJ6BC, AA4VK:JEL:AA4VK,
8P9AF:K6ZM, 8PBAG:K6ZM, 8P9AK:AK6T,
9H3CY:9H1GX, 9I1MX:K4BC, AH6GJ:WA9AE,
BV2DA:DL7FT, BV2FA:DJ9ZB, C9MDS:CT4VS,
CR9EUS:G3PFS, CO0NH:CT4NH, CO5TM:CT1CM,
CO6UW:CT4UW, CV0D:CX1AA, D6DXS:PA0GMM,
DF4ZL:CT13:DF4ZL, DF62H:CT13:DF6ZL, DL1RK:
CT3:DL1RK, DL1UFT:TE2:WA7KLK, DU1DL:JAD0ZZ,
DU1AS:DL2:BRX, EC0AR:BRX, ELO4PM:HL5AP,
F040A:FW9P, F04P:FW9P, FM4DS:FW9PNU,
FM4DU:W3HNK, FMSB9:W3HNK, FMSCD:FSVU,
FMSCW:NT7RO, FM5WD:W3HNK, FM5WE:W4FRU,
FM5WQ:W4OPM, FO0LG:K6ANP, FO0SID:K5BDX,
HD4BDC:HC4RA, HP1IXKR:JA7AGQ, J5CI:G4WFZ,
JT0XK:OK1XC, JV1UB:JT1KA, JW0A:SP2HMT,
JV55E:LA5NM, JV9MG:JR3MXG, JV9YW:G4T4S,
K6CH:KA8EDV, LF2J:LJ7JO, OES5TL:YK:OE5BA,
P28SN:ZL1:ZL20F, SV9CS:SV Bureau, TI2LCR:T1,
Bureau only, TV6CEE:F2VS, VK00CC,
VI0CC:VK2BCC, VK9N9:VK2ANO, VK9ZB:VK6YQ,
VK9ZG:VK6YL, VR6JR:G3OKQ, XQ1ADG:W8KLI,
YS1RRD:DJ9ZB, ZM20ZU:PA0LUD, ZM20ZU:K1ZZ.

SOME OF THE DX WORKED BY STEVE VK2PS, USING THE VI PREFIX — Period 17th November 1985 until 31st December 1985.

10 METRES

SD2DX, FJ8E5, JH2KWK, VHG 4ALV, SAAX, 7VX, BXF 9L.M.,
P29e ON, KPD, YC4FRX, ZK1DD, ZLs 1BAG, 2AIS, 3AGG and
4KE.

15 METRES

P29e ON, FJ8D, FJ8VA, DF4MV*, DL7ML, F6EXC*, G0BNB,
G0CIC, H6AWW*, OH4RF, OK2BVX*, ON4AAC and YU7ZZ.

20 METRES

Many Europeans plus 9M2SS, DL7SEA, L22KAF, YE3C,
Z5WAS and Z5BAS.
denoted CW operation.

Steve worked for how many individual amateurs who were using the YL prefix? knew the significance of its importance and, if so, did he or she inform their counterpart on the other side of the world of its special significance. One YU that Steve worked proudly announced it was his fifth VI prefix contact. Steve gave a 'commercial' on every OSO of 'This special prefix commemorates the 75th Anniversary of the WIA — VKs National Radio Association'. Well Steve, everyone knew what it was all about on both the modes you use ... VK3AH.

INTERESTING CARDS RECEIVED BY VK2PS

Included case from 9M2SS, 9YGR, BY5RA, HQ19HB, KLINT,
L240KTS, SVINAQ, VK7SA, YV8GD and 27 USSR SWL
cards.

STOP PRESS

● STOP PRESS ●

RD RESULTS INCORRECT

The Remembrance Day Contest results as listed in February Amateur Radio are incorrect. Ian VK5OX, the Federal Contest Manager, apologises to all contestants who have been embarrassed by the error.

The correct result listing will be published next month.



QSP

PSYCHIC SPECTRUM INVESTIGATION

The Japanese Government is investigating the possible use of psychic power in telecommunications.

An advisory committee has been set up by the Minister of Posts and Telecommunications to look at whether mental telepathy and ESP could provide new forms of commercial communications.

Japanese officials admitted the project seemed unrealistic, but they added that the US and Soviet Union were already studying the potential of psychic powers.

1985 ALARA CONTEST RESULTS

Call Sign	Point-Comments/Certificates
19	1047 Winner Overall and VK4 ALARA Member
VK4BSQ	988 VK3 ALARA Member
VK3CYL	885
VK3DSV	603
VK4VR	585
VK2EBX	571 VK2 ALARA Member
VK3DMH	494
VK6DE	478 VK6 ALARA Member
VK4ASK	461
VK28U	404
V338	401 OM Certificate
VK5YL	392 VK5 ALARA Member
VK7HD	380 VK7 ALARA Member
VK2DX	311
VK3NLO	267 Top Novice Score
VK4XI	255
VK3DVT	245
VK2DB	242
VK4PF	232
VK1GZ	230
VK2KFQ	227
VK3DOV	175
VK4NUN	165
V1SJ	150
V1SANW	134
VK2PXS	128
VTK3L	125 VE ALARA Member
VK3XF	125
VK4BRZ	110
ZL2OY	110 ZL ALARA Member
VK2DHI	105
VK3JBR	92 YL Non-Member
VK2CDB	90
VK4RC	88
VK2AQF	75
VK2DJJ	70

Check logs were received from VKs 2KIS and 4ATK.

Please note — the call signs are in order of placings.

Siencs thanks to all who have supported the contest and heartiest congratulations to Wendy VK4BSQ on a very fine effort, to Kim the runner-up and to all the certificate winners.

Thanks also to Marlene VK2KFQ, the Contest Manager.

Some of the comments received were:

Good on the guys, thanks for being around. — A most enjoyable contest. — Didn't hear any overseas YLs on CW.

And from the OMs:

Very casual contest, but operating procedures high. — Where were the YLs on CW? Very few heard. — Perhaps in future contests YLs could identify themselves as such on CW.

It looks as if those of us that have been a bit neglectful of our CW will have to brush the cobwebs off our keys and get in some practice before the 1986 Contest comes along.

Unfortunately, it was not possible to award the Mrs McKenzie Trophy this year.

There were 38 logs received — 22 ALARA members, one YL non-member, 13 OM logs and two check logs.

No SWL logs were received.

VK3 BARBECUE

The VK3 members held a barbecue at the home of Janet VK3BTU, in Woodend, during November. It was attended by nine members, two children and six supporters. A very enjoyable time was had by all. The weather was windy, showery, and sunny alternately, but the surroundings were very pleasant and relaxing which was conducive to lively and pleasant conversation.

Bonnie VK3PBL, managed to win the inaugural quoits championship, after a close play-off against Joan VK3NL. It was a mighty battle between two skilled players.

NEW MEMBERS

A warm welcome to Win ZL1BBN, who joined on 26th December 1985, and was sponsored by Joan

WIA BAND PLAN

The Amateur Service is a secondary service on the 1240-1300MHz band, the primary allocation being for Radio Location. Further, the segment 1260-1270MHz was reserved at WARC 79 for Satellite Communications. Experiments have shown that it is desirable to leave a segment 5MHz wide on either side of the operating frequency of a RADAR installation. Taking into account all of these factors, an FM repeater split of 12MHz has been specified.

BAND SEGMENT

USAGE

1240.0-1241.0	FM Relays and Links
1241.0-1243.0	FM Repeater Inputs
1243.0-1252.0	ATV Channel 1, sound 1251.750; vision 1246.250

1252.0-1253.0	FM Relays and Links
1253.0-1255.0	FM Repeater Outputs

1255.0-1256.0	FM Relays and Links
1256.0-1257.0	Digital and Packet Radio

1257.0-1260.0	In-Band and Cross-Band Linear Transponder
1260.0-1270.0	Satellite Communication (WARC 79)

1270.0-1280.0	General Use, except in areas where these frequencies are in use for Radio Location (Note 2)
1280.0-1293.0	ATV Channel 2, sound 1292.750; vision 1287.250

1293.0-1295.0	In-Band Linear Transponder
1295.0-1297.0	Weak Signal Modes, including Beacons (Note 3)

1297.0-1300.0	General Use, except in areas where these frequencies are in use for Radio Location (Note 2)
1300.0-1345MHz	All FM operation uses 25kHz channel spacing

2 In Australia, some Department of Aviation RADAR's are centred on 1275.000MHz and 1305.000MHz, while some Department of Defence RADAR's are centred on 1300.000MHz.

3 The beacon segment is from 1296.400MHz to 1296.590MHz, with particular frequencies allocated according to the beacon plan.

RADAR LOCATIONS (As listed in AMFAR)

1275MHz — 150 mile range + 1320MHz

VK1 Mount Majura

VK2 Mascot/The Round Mountain

VK3 Tullamarine

VK4 Eagle Farm

VK5 West Beach

VK6 South Kalamunda

1300MHz + 1345MHz

VK2 Williamtown
VK4 Amberley & Townsville
VK6 Pearce
VK6 Darwin
1305MHz
VK2 Mascot
VK3 Tullamarine
1307.5MHz
VK5 Salisbury

FM REPEATER OUTPUT FREQUENCIES AND RECOMMENDED USAGE

OUTPUT: 1253.025-1255.000MHz at 25kHz.
INPUT: 1241.025-1243.000MHz (12MHz split).

FREQUENCY/MHz

FREQUENCY/MHz	USAGE
1253.050	RTTY
1253.100	Mobile Voice
1253.150	RTTY
1253.200	Mobile Voice
1253.250	Data
1253.300	Mobile Voice
1253.350	Data
1253.400	Mobile Voice Secondary
1253.500	Mobile Voice Primary
1253.600	Mobile Voice Secondary
1253.700	Mobile Voice
1253.800	Mobile Voice
1253.850	ATV Liaison
1253.900	Mobile Voice
1253.950	ATV Liaison
1254.000	Mobile Voice
1253.100	Mobile Voice
1254.150	RTTY
1254.200	Mobile Voice
1254.250	RTTY
1254.300	Mobile Voice
1254.350	Data
1254.400	Mobile Voice
1254.450	Data
1254.500	Mobile Voice
1254.600	Mobile Voice
1254.700	Mobile Voice
1254.800	Mobile Voice
1254.900	Mobile Voice
1255.000	Mobile Voice

The above Band Plan was prepared after a detailed examination of the effects of transmission from amateur equipment on the Melbourne RADAR installations. Accordingly, FTAC is proposing a 12MHz split for 23cm repeater operation.

AMATEUR'S OVERSEAS FURLough

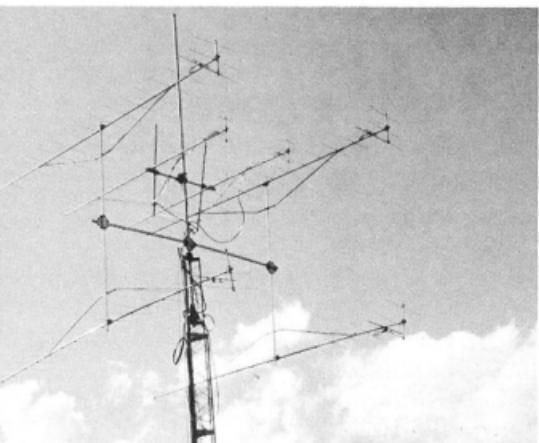
Recently, Bill Hempel VK4LC/VK1BH, past-Federal Awards Manager, visited Finland, Japan and England. The highlight of the trip was meeting with Marti Lane OH2BH. Marti is well-known in Australian DX-circles for his trips to many varied and frequently rare DX-locations.

Whilst in England, Bill visited the British Radio Licensing Branch, and although he has held the call sign G4BAW since 1979, was advised to change it to the new reciprocal licence, VK4LC/G0. This call is a mobile call sign and as Bill was travelling most of the time, it was more convenient to use than the required portable/mobile call of G4BAW/A as a separate application is required every time one goes mobile.

Bill visited G4KJF and personally delivered his Worked All VK Certificate. Other amateurs visited were: G2DF; G3WLX; G1JAF; and JH1INVZ.



Bill (left) and Marti.



Bill's VHF/UHF array. There are two 19 element beams for 432MHz, and four 19 element beams for 144MHz.



Marti's tower is 42 metres (140ft) tall, fully rotatable.



Listening Around

Joe Baker VK2BJX
Box 2121, Mildura, Vic. 3500

I think it may have been the custom during wartime for the Americans to name some of their ships after famous people in American history. Be that as it may, the trooper ship that was taking us through the Coral Sea to an unknown destination was the FREDERICK C AINSWORTH, and I have no idea how they arrived at this name. We got along well with the Americans aboard, their food was first class, although the bunks left a little to be desired.

'BARBERS DID A GOOD TRADE'

We rounded New Guinea somewhere in the Milne Bay area, continued through the Solomon Sea, and went up by Finschafen. Being well into the Tropics, the Army Barbers did a roaring trade with their six-penny (approx five cents) haircuts.

The ship continued upwards, hugging the coast of New Guinea, and onward through the Bismarck Sea. We were heading roughly west, although we still didn't know where we were destined for.

THE "FURPHIES" FLEW

Finally, at about 4pm on a hot Sunday afternoon, we dropped anchor off the coast of the island of Biak. Around us were a vast number of other ships of various sizes, and "furphies" (rumours) spread rapidly that this was where we were to be off-loaded. I looked across the water to the island and could see a signal lamp directed at our ship, about to send a message. Remembering my infantry signal training at the Dubbo camp, where we used Lucas lamps and Heliographs as part of our early training, I told one of my mates to write down the letters as I called them, as I attempted to read the message.

At the conclusion of the message my mate read out the letters I had called. It was instructions to

the American Captain on the FREDERICK C AINSWORTH to "up anchor" and be ready to depart in convoy with all the other ships promptly at 5pm.

NO SECRETS

Immediately, we let our fellow soldiers know the contents of the message.

Precisely on the dot of 5pm all the ships began pulling up their anchors and a convoy of 18-20 ships began moving in a westerly direction — a sight I shall never forget.

We continued on a westerly tack for about two days, through the Halmahera Sea, then headed north. Finally, early one morning, after crossing the Equator, we dropped anchor within sight of yet another tropical island. This was our destination — Morotai Island, located two degrees 20 minutes north, 128 degrees 25 minutes east. Our arrival was marked by a significant event in world history.

We had eaten breakfast and were lying on our bunks with full packs ready, awaiting orders over the loudspeaker for us to disembark. Eventually the speakers crackled to life to announce the death of President Roosevelt. That was all. There was then absolute silence throughout the ship as we did not even know that the American President had been ill. When we had recovered our composure we offered our condolences to the Americans.

FROM SHIP TO BOAT

Finally, we received our orders for disembarkation. A number of small flat-bottomed boats — they looked similar to the Putney to Mortlake punt that crossed the Parramatta River in Sydney — had pulled alongside to ferry us to the island. It was very hot, as we were just over two degrees

north of the Equator.

It was quite an experience to clamber onto the small boats as we had full packs on our backs, plus rifles, ammunition, helmets, and all the paraphernalia that makes a soldier look war-like. Once on the small boat we all had to stand as there was not enough room to sit down — very uncomfortable in the tropical heat.

It took about half-an-hour from ship to shore, where there were a fleet of army trucks waiting to take us the 19km (12 miles) to our camp — or to be more correct, the camp we had to build as that was at the camp-site was a couple of dozen tents and a number of four-posted roofed structures with no walls which were to be army kitchens.

The camp was set amongst the trees, but it was hopeless to accommodate several hundred soldiers, so one of the first jobs to be done was to cut down some trees to make room for more tents.

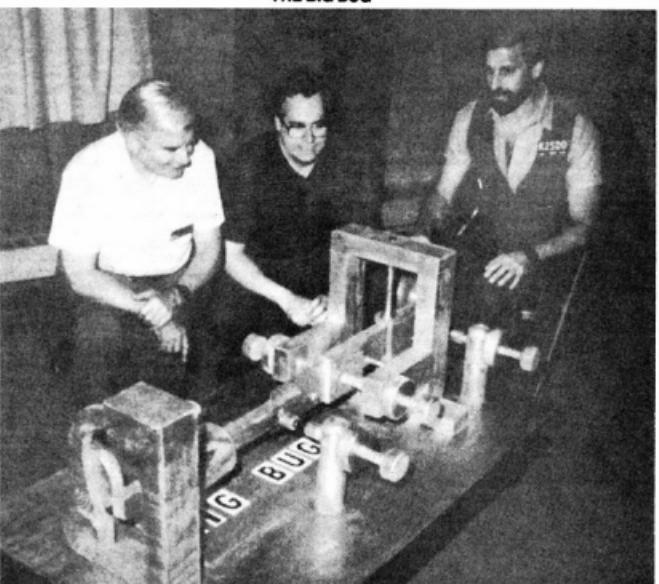
TREES COME CRASHING DOWN

It was customary for a whistle to be blown just before the trees were about to be felled, and I well remember one occasion when the trees almost turned us to pulp. With some mates I had been doing some "spine-bashing" (resting) in what we thought was well out of the danger zone. However, a whistle blew and I got up from my bunk, opened the tent flap and looked out. As I did so I saw a huge tree about to hit the tent. With a yell, I screamed to my mates, who all vanished like tropical lightning. The tree trunk cut the tent in half and took much of the gear with it.

There was an amusing side to the story though, ours was the only tent that boasted a rifle barrel that could shoot around corners.

73 till next time, Joe. AR

THE BIG BUG



Readers of the Pounding Brass columns of recent times will be familiar with the competition Marshall has been conducting — re large keys. Whilst browsing through Worldradio, November 1985, the accompanying photograph and article by Vivian Douglas WA2PUU, seemed appealing.

With amateurs always searching for better antennas, better signals, bigger scores, faster speeds, miniature rigs — anything to keep the mind improving and challenged, two amateurs found this challenge to be fun.

The idea was formulated by Jim Moyle W2BCH and brought to reality by Jeryl Wright NK2C, developed into a BIG BUG.

The idea began at a radio club meeting of the Radio Amateurs of Greater Syracuse (RAGS) when they wanted something different for an Old Timers Night. Jim suggested and sketched plans for a Vibroplex Bug, a perfect replica of the one he operates with.

Scaled at nine inches to one inch, Jeryl made the Bug completely out of wood with a steel spring. Copper contacts were made from wire with copper pipe cap inserts. Lathe-turned round parts and a sliding wooden weight makes the key fully adjustable over a wide range.

The finished product measures 33 by 53 inches and each detail is exact.

Condensed from Worldradio, November 1985.

FROM LEFT: Jim W2BCH, Jeryl NK2C and Mike K2SD, RAGS President.

ANTARCTIC QTHS AVAILABLE

More than 100 well-paid jobs are available in Victor Kilo Zero-Land ranging from administration positions to zoologists.

The Antarctic Division said the lowest paid expeditioner gets over \$35 000 remuneration whilst away from Australia.

Most trades are wanted including cooks, carpenters, and communications officers.



Pounding Brass

Marshall Emm VK5FN
Box 389, Adelaide, SA. 5001

GETTING YOUR SPEED UP

The column this month repeats a topic used about two years ago. If it sounds familiar, bear with me. In my early days, 20 WPM was my goal, but now we are ready to scale new heights. We will start with getting from five words-per-minute to 10, or more, and conclude with the rarefied atmosphere of the 40 WPM operators. How did they get there?

The best way to learn is to do; the best way to increase your CW copying ability is to copy, off air. The WIA sponsors slow CW broadcasts every night of the week. These are designed specifically to help people get to the speed necessary for the Morse Code and AOCP Morse examinations, and are highly recommended. WIAW, the official station of the APRL, broadcasts practice material and news, in CW, from USA on several bands. Schedules are published in QST.

Let us assume you know the code, perhaps you have even passed the Novice receiving exam, and now want to get your speed up to Full Call level — or better yet, you want to get your speed up so you can use CW effectively.

Of the two, the latter motive is a better one, because if you are trying to improve your copying ability, you are, at the same time, preparing yourself for the exam; but if your only goal is to pass an examination, you have set yourself too low a target.

There is something like a 'sound barrier' in learning Morse code. For years it was thought that a plane could not possibly break the sound barrier, and similarly, many operators get to a speed of around eight to 10 WPM, and are convinced they cannot go any further. This is because there are three ways a person can copy code, and there is a real barrier to get through. The first means of copying, which all of you remember from your first attempts at learning the code, is called 'character look-up'. In the learning stages, the right side of the brain is listening to the signal while the left side of the brain is comparing the received signal with a list of coded meanings — once the meaning has been recognised, an order goes back to the right side of the brain so the hand can write the perceived character. There is a limit to how fast you can do this, but it varies from person to person, in the range of about eight to about 15 WPM.

Once you reach this barrier you cannot improve your speed without going out to the second way of copying, which is character recognition. With character recognition, there is no process of translating between the two hemispheres of the brain. The sound of each character is recognised for what it is, and the hand writes the character without any conscious thought process involved. The same thing happens when you are learning a foreign language. When you are first learning the language you translate everything as you go, but as you improve your ability you can think in the foreign language without having to translate it. And, as with the code, some people never make the transition from translating to thinking.

Extending the analogy with foreign languages a step further, it has been known for years that if a person begins to learn early enough, by extensive exposure, the chances of becoming fluent are much greater. This applies equally to learning the code, and if you learn by identifying sounds, rather than counting dots and dashes, the transition to higher speeds is much easier.

It is worth noting that some people cannot get over the hump, no matter how hard they try. Quite often these people suffer (unknowingly) from a mild form of 'dyslexia'. Dyslexia is a reading dysfunction characterised by mental transposition of characters, and as you can imagine it can present severe problems in learning code. It can exist in varying degrees, and a person who has never suspected he is dyslexic can suddenly find an insurmountable obstacle when trying to copy code at 10 WPM.

Anybody can learn the code, and anybody can pass the five words-per-minute exam if they are given enough practice. But some people are simply

cannot pass the 10 WPM exam because it is beyond the barrier. These people would be very rare, I'm sure, but asking them to pass the exam is a bit like asking a blind man to sort resistors by means of the colour code — a bit unfair.

The key to improving your speed is to practice with characters sent at a much higher speed than the speed at which you can copy 100 percent. If you can afford the BT2 Morse Trainer, which starts off with a character speed of 18 WPM, with three seconds pauses between characters, you are 'home and hosed'. Follow the instructions and you will be a 20 WPM man in no time.

If the technology isn't available, you will have to make do with what is available on the bands. The WIA broadcasts are excellent, but their primary objective is to get people through exams, so they mostly don't go beyond 12 WPM, or so. Here are four handy hints for getting your speed up in a hurry:

Listened to the real brass-pounders on 20 metres. They may be going way too fast for you, but if you concentrate on identifying the odd character, you will soon find that you are starting to get more of it.

Practise with the Japanese stations on 15 metres. Call CO a bit faster than you can copy, and ask for repeats when necessary. The Japanese, as a group, are the most polite and helpful operators on the air.

Enter a CW contest. You will have to listen to calls and numbers several times at the beginning, but a few hours later you will be picking them up first time.

And the last hint!!! — throw the microphone away. Well, not literally, but why not unplug it for a while?

When I was trying to get up to speed I made a solemn vow that I would not engage in a phone QSO until after I had made a CW contact. Even now I can sometimes go for a whole week without touching the microphone. To get your speed up you need practice, and to keep at it you will need self-discipline. Keep at it, and you will get there — if you follow all these hints religiously you will be a top operator in next to no time.

Then one day you will be sitting there copying at 20 WPM, or so, and suddenly realise — my speed has stopped going up. Uh-oh. You have just crashed into the second 'sound barrier'. Fortunately, this one isn't serious, and you will eventually begin to slide through it without having to work at it.

The third and final way of copying code is phrase recognition. Rather than listening to individual characters, you start to hear whole words and phrases. In the earlier stages, long before you get to 20 WPM, you will have noticed that some expressions, like 'DE' and 'RST' are immediately recognisable without having to identify the individual characters. The more you operate, the more you build on this list of identifiable words (as opposed to characters), and eventually you will recognise all of the words that are commonly used in amateur traffic. Where a new one occurs, you will continue to copy while your mind 'plays back' the unfamiliar code and tries to make sense of it.

This is how you get to be a real code operator. You have probably wondered how anyone can copy at 40 WPM or more — now you know. Once you start recognising phrases there are no real barriers left, except the ability of the human ear to discriminate, or of the machine to generate. The record for CW copy is around 75-80 WPM.

Somewhere on the way to the upper regions you will have to let your manual key behind, and become comfortable with an electronic keyer (or perhaps a mechanical auto-key).

You will also have to discard your pencil. There is a limit to how fast you can write, especially while you try to understand the content of what is being sent, as well as the actual words. Here again, practice is the answer. At first you will be concentrating so hard on the code you will have to go back and read your own copy to understand what was sent. After a while, you will find yourself knowing nine times out of 10 what the word is

before it is completely sent. This is the process called 'journalism', so much frowned upon when you are studying for an exam, or copying coded traffic. But it is the way to go if you hope to be a competent CW operator, because it is right 90 percent of the time, and gives you a chance to relax your mind while you are copying.

In the end, you will get to a point where you can listen without transcribing — just make the occasional note. Professional operators are always shown using typewriters, and there is a reason for this — the hand will get tired and give up before the brain does, at around 25 WPM. A good typist can type, without thinking about it, at speeds up to 100 WPM, or more. This is the only way to get you need hard-copy.

Finally, speed should never be an end in itself. Once you get to 40 WPM, or more, who will you work? Mostly people who are slower, right? Right. This will come a day when you realise you are comfortable with the speed you are working — you can strain a bit and get the faster traffic, or relax and enjoy chewing the rag at 20-25 WPM. Then you can stop worrying about speed and make CW 90 percent fun and 10 percent work, instead of the other way around.

73 till next month.

AR

Magazine Review

Roy Hartkopf, VK3AOH
34 Toolangi Road, Alphington, Vic 3078

(G) General : (C) Constructional : (P) Practical without detailed constructional information : (T) Theoretical : (N) Of particular interest to the Novice : (X) Computer Program

C Q OCTOBER 1985 — 1984 World-Wide CW DX Results. CQ WW DX Contest. All-Time Phone Records. 160 metre DX Contest Rules. Contest Calendar for October and November. Quick Conversion of L4B for use with the 3CX120047. Unverified Highest Scores of 1985 CQ WW WPX CW Contest. Understanding Modern Amateur Gear, Part 3. Review of Kansas City Keyer KC-1. New Innovation — Registration of Missing People. **C Q NOVEMBER 1985** — RTTY Special including Packet Radio. (G)

WORLDRAID DECEMBER 1985 — Humanitarian Activities in Amateur Radio including Mexican Earthquake, News and Views over the World. Amateur Personality Test. QRP (G). Report on first SSTV in Space. Report of Amateur Participation in Balloons over the Atlantic. Roof Mounting of a Trap Vertical.

RADIO COMMUNICATION JANUARY 1986 — Direct Conversion CW Transceivers. (P) Rotator Speed Controller. (P) Index for 1985.

HAM RADIO NOVEMBER 1985 — Tapered Elements. (G) 75 (80) metre Transceiver. (C) Home Brew Receiver. (N).

C Q TV MAGAZINE No 132 — General Information, News, Circuits, Amplifiers, etc for ATV. 10GHz Video Beacon.

AR

STOLEN EQUIPMENT

The following amateur radio equipment has been reported by the Melbourne office of Emtronics, as being stolen.

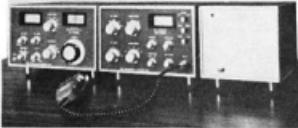
1 x C1735 Ser No 36304455
1 x IC2909 Ser No 17703342

If you are offered one of these items or know of their location please contact Sen Det Ewan McDonald on (03) 329 0000.

KNOW YOUR SECOND HAND EQUIPMENT

This month we will look at the early Icom equipment. In actual fact, the Icom name did not come into use until a few years after the company was founded. The original equipment was called Inoue, after the founder of the company.

The first Inoue equipment to arrive in Australia was imported by Syd Clark VK3ASC, and this was the IC-700, an HF transceiver. At this time, Inoue was also building two metre FM equipment. The FDFM-2 was one such model but, although sold in the USA, none were imported into this country.



INOUE IC-700 TRANSCEIVER

Introduced to Australia in mid-1969, the IC-700 was a transceiver in three parts. The basis of it was an amateur band receiver, covering 3.500 to 29.500MHz in 500kHz segments. VFO calibration was in 1kHz steps and a CW filter was standard equipment. The transmitter section was in a similar wood cabinet, using a pair of 6146s. Apart from the final stages of the transmitter section, everything was solid-state. Frequency control of the transmitter came from the receiver.

An AC power supply/speaker unit completed the set up. As I have never had the opportunity to use one of these, I cannot comment on the performance, however, from the specifications, it would seem to have been quite reasonable for the time.

The price for the combined unit was \$505. Second-hand value would be around \$225, US.

INOUE IC-20 2 METRE FM TRANSCEIVER

This unit was first introduced into Australia by the Industrial and Medical Electronic Company of

Melbourne, in mid-1971. It was a 12 channel solid-state FM transceiver, with crystal controlled transmit and receive frequencies.

Construction was somewhat different, with several individually shielded modules held into the main chassis frame. Overall size was quite compact and slightly smaller than the Yaesu FT-2FB. Transmitter power output was rated about 10 watts output, with most producing 12-14 watts. Receiver performance was good, the sensitivity specification was 0.35 μ V for 20dB quieting.

Price new was \$295, with two channels fitted, second-hand value today would be around \$85.

Later in its production run the Inoue IC-20 became the Icom IC-20.



ICOM IC-21

This two metre FM transceiver was released in early 1974. The IC-21 was a home station version of the IC-20. In addition to the usual IC-20 features, the 21 boasted a built-in AC power supply, receiver offset tuning, a discriminator meter calibrated in frequency \pm from nominal, and a self-contained SWR meter. Constructed in a very smart table-top cabinet, the IC-21 was an excellent addition to the shack.

New price of the IC-21 was about \$275 with the usual tree channels installed. Value today of a second-hand model would be about \$125.

ICOM IC-21A

The Icom IC-21A was released in late 1974. In

RADIO PRIMER

There are two sorts of electrons, or is it three? The third group are real live wires so they may be eliminated in this primer.

The main two electrons which this primer is interested in are: Radio Frequency and Audio Frequency electrons, known simply as RF and AF.

Any school student knows electrons tend to travel at various rates of frequency. AF electrons travel slowly enough to be heard — even by older people with feeble hearing. It is true to say that radio and television manufacturers would not be in business today if it were not for this basic fact. RF electrons at the lower end of the frequency scale are no more than glorified D class electrons who put one over older people, but not so toddlers. Those electrons at the highest end of the scale could be classed as the elite RF electrons and are A1. They are small in character, but intense in number. Their most noticeable problem is one of always getting sunburnt.

The middle range RF electrons do the most work and are the most common, being widely used everywhere. There are also the easiest to catch. They gather like stalkings on a wire at sunset. There is little sport to be had in catching them. Apart from these most interesting facts, all electrons in the RF groups are decidedly superior to the slower AF ones.

This is why current lags voltage and vice-versa! There are millions of these RF electrons hanging about; just turn on your radio to listen to your favourite program and herds of these smart RF electrons are there — just waiting. Just how do

you sort out the ones you want from the millions that are milling about?

If you have ever dabbled in farming then the answer is simple. A device like a cattle chute and grid. This device, termed a 'mixer', grabs plenty of them, beats them all up, makes them giddy, pushes the selected ones through the grid and shoves the rest down the chutes. Nothing to it really and all so simple. All very basic, so far.

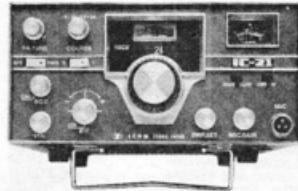
This sample batch has been given a very special task. It must try and get past the crowd at the stage called a 'detector'. The detector is a very selective process, most likened to a barrier. Some get through, others are tossed back with the choice of lowering themselves or going to ground. There is indeed a struggle at these gates with RF and RF electrons in every phase of the action. It is a highly discriminative situation and is a wonder no one has ever passed a law against it.

The RF electrons complain that they have carried the AF electrons for far too long and are reluctant to be pushed into the ground. No matter how long the freeloaders protest, they are conned every time. Occasionally they do win out for a time but, being thought of as superior electrons, they can't help giving the game away. They are promptly dealt with once contempt has been shown with a display of raspberries, or similar. Except in this instance, most decisions are heavily biased in the favour of the lowly AF electrons. The speaker gets to have the final say and blabs to anyone who is prepared to listen.

Contributed by E C Brockbank VK2EZB

A Series to Help You Identify Amateur Equipment

Ron Fisher VK3OM,
3 Fairview Avenue, Glen Waverley, Vic. 3150



actual fact the IC-21 (see above) is a rare piece of equipment. It was soon superseded by the 21A. Identical in appearance to the 21, the 21A was upgraded in several aspects.

Perhaps the most significant difference was the ability to use the matching digital DV-21 external VFO. The DV-21 was a key pad frequency selection synthesised VFO with digital frequency display. Unfortunately, frequency coverage was limited to 2MHz, 148-148MHz. In its day this was quite a device!



Frequency scanning and memory channels were yet another of its features. However, with all the good features, there was also one problem — reliability. I doubt that there would be many DV-21 VFOs in working order today.

New price of the IC-21A was \$285 and the DV-21 — \$298. Second-hand value today would be about \$135 for the IC-21A. The DV-21 price would depend on whether it still works — perhaps \$50.



NEW VIDEO TAKES OFF!

A new 8mm video with a tape about the size of an audio cassette could replace the current standard 12.65mm (half-inch).

Approximately 120 manufacturers, including all the Japanese, were turning production to 8mm and industry sources say it is only a matter of time before it becomes the world standard.

NO SHOCKS IN THIS NETWORK

A Sydney company, Quanta Electronics, has introduced a device which turns mains power outlets into a microcomputer network.

Quanta say their Nectar Ring, a high technology box, links stand-alone machinery into a network without the need to install new cables in an office or factory.

The company say the system is completely safe for users, data and computers.

MORE IN OCEANIA

The population of Oceania, a grouping which includes Australia, New Zealand and other smaller Pacific Islands, grew by 4.2 percent to 25 million in the June 1986 year.

This compared with a world-wide population growth of 1.7 percent, according to the United Nations.



AMSAT
Australia

AMSAT Australia

Colin Hurst VK5HI

8 Arndell Road, Salsbury Park, SA. 5109

NATIONAL CO-ORDINATOR

Graham Ratcliff VK5AGR

INFORMATION NETS

AMSAT AUSTRALIA

Control: VK5AGR

Amateur Check-In: 0945 UTC Sunday

Bulletin Commencements: 1000 UTC

Winter: 3.685MHz - Summer: 7.064MHz

AMSAT PACIFIC

Control: JA1ANG

1100 UTC Sunday

14.305MHz

AMSAT SW PACIFIC

2200 UTC Saturday

21.280/28.878MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts.

ACKNOWLEDGEMENTS

This month I am very appreciative to the UOSAT Team for the information contained in Bulletin 161 — 17th January 1986. Also, contributions were received from Bob VK3ZBB and Graham VK5AGR.

AMSAT-AUSTRALIA NEWSLETTER

Graham VK5AGR, the National Co-ordinator of AMSAT-Australia, is now producing a monthly newsletter containing updated satellite news, orbit predictions, Keplerian data and operating hints and techniques. The objective of the newsletter is to keep the amateur populous informed on the latest information available, and to realise funds for the funding of projects, or the purchase of an item/s of hardware for a future amateur satellite project; eg Phase-3C, 4, or whatever. The cost of the Newsletter is \$15 and cheques made payable to the WIA South Australian Division should be forwarded to Graham, QTHR.

To the present time the Newsletter has been a resounding success within Australia and comments are now being received from overseas amateurs, who have received copies from friends in Australia which indicate they too would like something similar in their own countries.

The Newsletter is basically an eight-page compendium of the nitty gritties that are relevant in the short-term, items that are basically out-of-date when printed in this column. To date, it has included some small computer programs specifically for satellite determination, the latest telemetry blocks from OSCAR 10 and OSCARs 9 and 11. If you are at all interested in satellite communication, this newsletter is a must.

UOSAT-2/OSCAR 11 DCE EXPERIMENT

Included in last months column was information relating to the Digital Communication Experiment (DCE) Version-2 Software, which is currently in use of board OSCAR-11. As mentioned in that article, there is a Cyclic Redundancy Check (CRC) appended to each frame. Included this month, courtesy of the UOSAT Team, are the respective Assembly Routines for the 6502 and Z80 Microprocessor Chips for those interested in writing their own software. I can personally recommend the Z80 routine, as I have included it in my software to read the DCE Title Frames. The routines are as follows:

CRC CALCULATION FOR DCE FRAMES

Every DCE frame ends with a two Byte CRC. The CRC is an error detection code, and if you use the CRC equation on a received frame, your two-Byte answer should match the two-Bytes transmitted at the end of the frame. The CRC used on the DCE is calculated using a modified CCITT CRC algorithm. For those familiar with CRCs, this CRC uses a 16-bit shift register to implement the equation $(x^{16} + x^{12} + x^5 + 1)$. If you wish to study how the DCE implementation differs from this, or if you simply wish to implement CRC checking for DCE frames, see the following Z80 and 6502 machine-language programs. In using these programs on DCE frames, remember that

**OSCAR-10 APOGEES
MARCH 1986**

DAY	ORBIT #	APOGEE U.T.C H:MM:SS	SATELLITE CO-ORDINATES		BEAM HEADINGS					
			LAT DEG	LON DEG	SYDNEY AZ DEG	SYDNEY EL DEG	ADELAIDE AZ DEG	ADELAIDE EL DEG	PERTH AZ DEG	PERTH EL DEG
1st March	60	2844 0553:11	-26	244	274	53	286	65	357	83
2nd March	61	2846 0512:11	-26	235	281	62	382	73	57	79
3rd March	62	2848 0431:11	-26	226	293	71	335	79	76	76
4th March	63	2850 0350:11	-26	216	317	78	38	79	84	61
5th March	64	2852 0289:11	-26	207	13	81	61	72	98	52
6th March	65	2854 0228:11	-26	197	56	75	75	64	95	43
7th March	66	2856 0147:11	-26	188	73	67	83	55	99	34
8th March	67	2858 0106:11	-26	179	82	58	89	46	183	25
9th March	68	2860 0025:11	-26	169	89	49	94	38	186	17
10th March	68	2862 2344:11	-26	168	94	41	99	29	118	9
11th March	69	2863 1123:41	-26	335					247	4
12th March	69	2864 2303:11	-26	158	98	32	183	21	115	2
13th March	70	2865 1042:41	-26	326					251	12
14th March	70	2866 2222:11	-26	141	182	24	188	13		
15th March	71	2867 1001:41	-26	316					255	28
16th March	71	2868 2141:11	-26	132	187	16	112	6		
17th March	72	2869 0920:41	-26	387	244	-8	258	18	259	28
18th March	72	2870 2100:11	-26	122	111	8	117	-1		
19th March	73	2871 0039:41	-26	297	248	7	254	17	263	37
20th March	73	2872 2019:12	-26	113	115	1				
21st March	74	2873 0756:42	-26	288	253	14	259	25	267	45
22nd March	75	2875 0717:42	-26	279	257	22	263	33	272	55
23rd March	76	2877 0636:42	-26	269	261	38	268	42	278	64
24th March	77	2879 0555:42	-26	268	266	39	274	51	288	73
25th March	78	2881 0516:08	-26	250	278	48	281	59	314	81
26th March	79	2883 0435:08	-26	241	276	56	291	68	27	83
27th March	80	2885 0354:08	-26	232	285	65	311	76	66	75
28th March	81	2887 0313:08	-26	222	388	74	355	88	79	67
29th March	82	2889 0232:08	-26	213	334	88	44	77	86	57
30th March	83	2891 0151:08	-26	203	33	79	66	69	92	48
31st March	84	2893 0110:08	-26	194	63	72	78	61	96	39
1st April	85	2895 0029:08	-26	185	76	64	85	52	100	31
2nd April	85	2897 2340:08	-26	175	84	55	91	43	184	22
3rd April	86	2899 2307:08	-26	166	98	46	96	35	188	14
4th April	87	2900 1046:38	-26	156	95	37	188	26	244	-1
5th April	87	2901 2226:08	-26	147	99	29	185	18	116	7
6th April	88	2902 1005:39	-26	138	104	21	189	11	248	7
7th April	88	2903 2145:09	-26	129	184	21	189	11	253	-1
8th April	89	2904 0924:39	-26	122	184	21	242	-2	253	15
9th April	89	2905 2104:09	-26	113	184	21	189	11		
10th April	90	2906 0043:38	-26	313			247	5	256	23

**OSCAR-10 APOGEES
APRIL 1986**

DAY	ORBIT #	APOGEE U.T.C. HHMM:SS	SATELLITE CO-ORDINATES	BEAM HEADINGS-----I-----							
				LAT DEG	LON DEG	SYDNEY AZ DEG	EL DEG	ADELAIDE AZ DEG	EL DEG	PERTH AZ DEG	EL DEG
8th April	98	2107 2023:08	-26	128	108	13	114	3			
1st April	91	2108 0802:38	-26	303	246	2	252	12	268	31	
	91	2109 1942:08	-26	119	112	5					
2nd April	92	2110 0721:38	-26	294	250	9	256	28	264	48	
	92	2111 1951:08	-26	109	117	-2					
3rd April	93	2112 0640:38	-26	285	254	17	261	28	269	49	
4th April	94	2114 0601:05	-26	275	259	25	265	36	274	58	
5th April	95	2116 0528:05	-26	266	263	33	278	45	282	67	
6th April	96	2118 0439:05	-26	256	268	42	276	54	296	76	
7th April	97	2120 0358:05	-26	247	273	51	284	62	336	82	
8th April	98	2122 0317:05	-26	238	268	59	297	71	45	88	
9th April	99	2124 0236:05	-26	228	298	68	324	78	71	72	
10th April	100	2126 0155:05	-26	219	318	76	15	79	81	63	
11th April	101	2128 0114:05	-26	209	356	81	53	74	88	54	
12th April	102	2130 0033:05	-26	200	46	77	78	66	93	45	
	102	2132 2352:05	-26	191	68	69	88	57	97	36	
13th April	103	2134 2311:05	-26	181	79	61	87	49	181	28	

SATELLITE ACTIVITY FOR PERIOD 1 to 30 NOVEMBER 1985.

1. LAUNCHES.

The following launching announcements have been received:-

1985-105A	Cosmos 1701	Nov 9	USSR
106A	Cosmos 1702	Nov 13	USSR
107A	Raduga 17	Nov 15	USSR
108A	Cosmos 1703	Nov 22	USSR
109A	STS-61B	Nov 27	USA
109B	Morelos-B	Nov 27	Mexico
199C	Aussat-2	Nov 27	Australia
109D	Satcom KU-2	Nov 28	USA
109E	Oex Target	Nov 30	USA
110A	Cosmos 1704	Nov 28	USSR

Notes:-

- On board STS-61B, utilising Shuttle vehicle Atlantis were B.H.Shaw, J.L.Ross, S.C.Spring, R.N.Vela, B.D.O'Connor, Mary L.Cleve, and C.D.Walker. The payload included an Imax Payload Bay Camera, a Continuous Flow Electrophoresis System and satellites Morelos-B, Aussat-2, Satcom KU-2 and Oex Target. The orbit elements were apogee 370km, perigee 361km, inclination 28.5 deg and period 91.9 min.
- Morelos-B elements were apogee 36900km, perigee 350km, incl'n 25.8° and period 655.8 min.
- Aussat-2 elements were apogee 36571km, perigee 35765km, incl'n 0.3°, and period 1435.6 min.
- Satcom KU-2 elements were apogee 35254km, perigee 329km, incl'n 26.1° and period 623.2 min.
- Oex Target elements were apogee 386km, perigee 372km, incl'n 28.5° and period 92.1 min.

2. RETURNS.

During the period thirtyfive objects decayed including the following satellites:-

1985-081A	Soyuz T-14	Nov 21,	1985-096A	PRC 17	Nov 7,
1985-104A	STS-61A	Nov 6,	1985-106A	Cosmos 1702	Nov 27.

the CRC covers all Bytes from the <cmd> to the end of the <data> segment. It does not include the CRC itself, or the leading <10h><03h> Bytes.

6502 CRC CALCULATION

The following sub-routine uses three zero page locations:

&80 (hex 80) is a scratch location
&81 is the most significant Byte of the CRC (transmitted first)
&82 is the least significant Byte of the CRC (transmitted second)

When a new name is to be checked, &81 and &82 must be set to zero. Then the routine must be called once for each Byte in the received frame, with that Byte in the A register. After this, &81 and &82 will contain the CRC Bytes. These Bytes can then be compared to the received CRC Bytes.

50 CKSUM

60 STA &80	180 LDA &82
70 LDX #8	190 ROL A
80 CRC5,CDA &80	200 STA &82
90 ROL A	210 BCC CRC4
100 BCS L1	220 LDA &82
110 AND #&FE	230 EOR #&10
120 JMP L2	240 STA &82
130 L1 ORA #1	250 LDA &81
140 L2 STA &80	260 EOR #&21
150 LDA &81	270 STA &81
160 ROL A	280 CRC4 DEX
170 STA &81	290 BNE CRC2
	300 RTS

(Strings preceded by ":" are labels. Numbers preceded by "X" are hexadecimal, and numbers preceded by "#" are immediate data).

Z80 CRC SUBROUTINE

This subroutine uses the HL register pair in the same way that the 6502 subroutine uses the zero-page locations &81 and &82.

When starting to CRC a frame, set HL to zero. Call the routine with each Byte of the frame in the A register. Then, the frame's CRC will be in the HL register pair. The Byte that is transmitted first is in L and the Byte transmitted second is in H.

: COMPUTE CRC ON A, INTO HL

CKSUM:

PUSH AF
PUSH BC
LD B,8
LD C,A

CRC2:

LD A,C
RLCA
LD C,A
LD A,L
RRA
LD L,A
LD A,H
RRA
LD H,A
JR NC,CRC4
LD A,H

XOR 10H :CCITT; OR USE 80H

LD H,A

LD A,L

XOR 21H :CCITT; OR USE 05H

LD L,A

CRC4:

DEC B
JR NZ,CRC2
POP BC
POP AF
RET

CRC SUMMARY

To check a DCE frame for errors, call the CRC subroutine for each Byte in the frame, starting with the <cmd> Byte and ending with the last Byte in the <data> field. Compare the results of this calculation with the received CRC. The two Bytes that follow the <data> field, if the CRC that you have calculated matches the CRC that you receive, then there were no errors in the received frame.

SIDERIAL CONVERSION FACTORS -

1986-1999

For those readers who are running satellite prediction programs, the siderial conversion factors for 1986 to 1999 are as follows:

YEAR	GMST	YEAR	GMST
86	0.2761916	93	0.27885326
87	0.27535606	94	0.27619018
88	0.27469296	95	0.27552708
89	0.27676777	96	0.27486399
90	0.27610467	97	0.27693860
91	0.27541515	98	0.27627570
92	0.27477847	99	0.27561260

The above information is courtesy of Graham VK5AGR, and the AMSAT-Australia Newsletter.

UOSAT NEWS BULLETIN

With acknowledgement to the UOSAT-OSCAR-9 Bulletin-161, 17th January 1986, we have the following items.

MARCE

Following the several delays in the launch of STS-61C, the MARCE payload appears to be operating well with reports from a number of ground-stations of telemetry received both direct and heard through AO-10. Marshall Space Centre experimenters have requested copies of telemetry to be forwarded to them — please.

SOVIET SPACECRAFT (G3IOR)

RS-9 and RS-10 are now complete, tested and ready for launch, probably early this year. RS-10 incorporates a 15m up to 2m down transponder with two band-limit beacons on 145.957 and 145.997MHz. Licence authorisation is still awaited for the 435.395MHz beacon. The two spacecraft may be launched separately. They may possibly have been launched last month.

A further delay in ISKRA-4 is now probable following the premature return of one of the SALYUT-7 Cosmonauts, due to illness in early December 1985. The next, replacement, launch for SOYUZ was expected on 16th January or 3, 4, 16th February, with the possibility that one of the Cosmonauts may have been a radio amateur. Discussions have taken place for Soviet amateur radio operation from the SALYUT-7 space station.

ARSENE

A report from G3IOR, indicates that the French AMSAT ARSENNE satellite is progressing towards a future ARIAN launch. The mechanical structure is complete and spin balance and vibration tests have taken place. The prototype spacecraft electronics are performing to specification with work progressing on the antenna and solar array deployment mechanisms, command and telemetry systems and the new Apogee kick motor.

DX

A special call sign, ZS6JCF, has been issued to celebrate the 100th Anniversary of the city of Johannesburg. The call sign, ZS6JCF (Johannesburg Centenary Festival), will be used throughout 1986. Watch for ZS6JCF on AMSAT OSCAR-10 Mode B. They began operating on 11th January between 2000 and 1500UTC. Mode L activity will be announced later. A special gold-leaf QSL card will be issued for all satellite contacts.

UOSAT SPACECRAFT OPERATIONS

DCE REPORT (G0/KSK)

Development of ground-station software for DCE operations has continued, both at Surrey and in Los Angeles (USA). The following commands are available to DCE ground-stations, and the list provides insight into the operation of the DCE mailbox.

LOGIN tells the DCE the call sign of the ground-station.

LOGOUT frees the DCE for use by another ground-station. Logout is automatic if the DCE does not hear the ground-station for two minutes.

PUT is used by the ground-station to store a message to the DCE.

CONTINUE allows the ground-station to continue (on another orbit) a PUT operation that was interrupted by LOS.

GET is used to retrieve a message from the DCE.

KILL deletes a message.

END resets DCE software to the title-display mode, without logging out the ground-station. Thus, the DCE has all of the commands needed in a computer bulletin board system. A command will soon be added to allow a station to GET all new messages directed to that ground-station. Efforts are under way to bring up more DCE ground-stations. Before the end of January, it was expected that stations in at least two more countries would be operating.

DCE OPERATIONS (G0/KBK at UoS)

This week's (17 January) DCE operations concentrated on further hardware tests at NKGK in Los Angeles and the forwarding of a few messages from G0/KBK, via the UO-11 DCE to US packet stations. Operations at UoS have been going sufficiently smoothly that DCE operations have not monopolised the SC downlink, and listeners in the UK and Europe have experienced a reasonable amount of normal two metre beacon operation. In Los Angeles, much of the DCE

operation has been done without interrupting two metre beacon operation and we hope to make this "standard operating procedure" for the DCE. The spacecraft DCE software has not changed and both UoS and USA ground-station software systems are operating efficiently. The next ground-station to enter the DCE network will, very likely be, Ian Ashley ZL1AOX. Ian has long operated an OSCAR-10 command station, and he will be providing a gateway link between the DCE and the packet network in Auckland, New Zealand.

POLITE WARNING

In recent months, it has been disturbing to note that a number of stations have been observed to have downlink signals at least 12dB above the level of the Engineering Beacon. It is strongly recommended that when operating on OSCAR-10 that you monitor your downlink signal reference to the Beacon. If you are stronger than the Beacon you should turn the "wick" down and thus satisfy two fundamental requirements.

Conserve on battery power which is most important during the eclipse seasons, like now.

Not activate the AGC on the spacecraft. Whilst signals are peaking 12dB over the Beacon it means that all signals are suppressed by at least 12dB in the passband, consequently the QRP signals do not get a fair go.

It is common talk that it is always the Americans who are the villains in this matter. At times, this is correct, however there are too many VOs who are also guilty.

It is not too late to pass a belated New Year's Resolution to check your downlink against the Beacon a little more often in 1986.

RUDAK

Next month I shall commence to publish extracts from the RUDAK Draft Specification. RUDAK (Regenerativer Transponder für Digitale Amateurfunk-Kommunikation) is a digital experiment to be flown on the Phase-3C spacecraft due for launch in July/August 1986. However, those especially interested in the experiment (packets) may wish to get a copy from Graham VK5AGR, CTHR, by supplying a 120 x 235mm SASE with a small donation to cover photocopying.

Colin VK5SH

WIA 75 AWARD RECIPIENTS

372	Kenton Dean NK6F
373	Ray Lippsold VK4PK
374	B W Schreuder VK2CWS
375	Keishi Murakami JE4LPH
376	Mitsuo Murakami JA5TX
377	A J Odgers VK4KX
378	Michel Rouquerol FT8XB
379	Michio Okada JR7COX
380	E R Tester VK5MV
381	Carmenza Pond KB6ANC
382	Joe Horwill NG1KO
383	Hideo Otsuka ZL7GYC
384	Rick Risley K8DIFH
385	Fred Kolb VK3CFK
386	Joe Gatt NG6HW
387	Joe Brown N7EZG
388	Peter Bowyer VK3NBL
389	J C Cowan VK2ZC
390	Robert Hopkins VK2VMM
391	Jim Irving ZL2BMM
392	S C Matthews ZL2P
393	Toshiki Iwase JE2BV
394	Reg Morgan VK2ABM
395	F J Stirk VK2ABC
396	John Pace WB5EUC
397	Joy Collins VK2EBX
398	Val Searle ZL3GW
399	R L Natzke ZL1AYZ
400	Jose Rodriguez Peinado EA7EGT
401	Joseph Segura JK2KUG
402	V Noble VK5AGX
403	H J Griffiths VK3CAL
404	Mick Puttuck G3LJK

405	M J Matthews G3JFF
406	M J Haddon G4ZTV
407	M E Austin VK2KZ
408	Harry Petroskiakas VK3ABO
409	Shin-ichi Nemoto JA1TGU
410	Don Callow VK5IDOC
411	Joe Scheimiri 9HHTGY
412	John Weir VK4KJW
413	H Suylina VK4PFT
414	Ivan Tsvetkov VK3PFG
415	D W Oiley 3D2DW
416	Eugene Novozir WA2UKA
417	Peter King VK2CH
418	Takashi Hosokawa JA3UCO
419	Ross Forbes FO0FB
420	Gilbert Griffiths VK3CGG
421	Richard Bowyer VK5NRB
422	A Franklin Pain VK2DYP
423	Alex McDonald VK4TE
424	Reg Smart VK2HM
425	Kotaro Mizuno J2GKA
426	L G Mills G3EDM
427	Ned Paton VK2MMP
428	Graeme Whitehead VK4NYE
429	J R Kemp VK3CAY
430	Kevin Bell ZL1IANI
431	Tetsuo Sakiyama JI2UIH
432	Masanori Uematsu JK3JSY
433	Owen Hunt ZL2AWPA
434	W I Northeast VK5NOT
435	Peter Haines ZL4LD
436	Menabu Ishitani JR7UCA
437	Eizi Ishitani JR7UCB

438	Hisako Ishitani JR7UCC
439	Patrick Williams ZL2BG
440	Maunce Potter VK7SA
441	Allan Johnston ZL2BPV
442	Mitsuo Nakano JR5HCU
443	Kiichi Shimjima JABMQ
444	Ben Jones WIA-130377
445	Gene Clark W6DOH
446	Joseph Xuereb VK2NS
447	Brian Major VK2JBM
448	Ambrose Coman VK3VAC
449	William Matthews VK3WJ
450	Roy Mahoney VK4BABY
451	Jonathan Marshall VK3PRN
452	P F Moore VK5ATU
453	Disabled Radio Amateurs Club VK3ZZ
454	John Sutherland VK3NLO
455	L E Wright VK3ALT
456	Mary Ketizer KA0MX
457	A J Brean VK6ST
458	H Iman-Sulaiman YC1DOA

Certificates numbered 75A have been issued to the WIA Federal Executive and each WIA Division which qualified for the award while activating the commemorative call sign VK75A.

The Uranga Convention will be held over the Easter Weekend.

ANNOUNCING THE LUCKY DOOR PRIZE WINNERS . . .

- 1st J Payne (Ticket A1)
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Contests



Ian Hunt VK5QX

FEDERAL CONTEST MANAGER

Box 1234, GPO, Adelaide, SA, 5001

CONTEST CALENDAR

- MARCH**
 1- 2 ARRL DX Phone Contest (Rules January issue)
 8- 9 OCAVA Phone QSO Party (Rules February issue)
 8- 9 Commonwealth Contest 1986 (Rules January issue)
 15-16 YL-SSB Contest (Rules February issue)
 15-16 John Moyle Memorial Field Day Contest (Rules this issue)
 22-24 BARTG Spring RTTY Contest
- APRIL**
 5- 6 WW SSTV Contest
- MAY**
 27-28 1986 CLARA AC/DC "Mystery" Contest (Rules this issue)

It may be anticipated that the Polish CW and Phone Contests will be held during April and looking further forward, I would expect that the CO WW WPX CW Contest will be held during May.

VK NOVICE CONTEST 1985

This year, 1985, VK5NOD proved too much for the opposition with a composite top novice score on Phone and CW, his total being 739 points. Congratulations to VK5NOD who, having won the Keith Howard VK2AKX Trophy for his performance in 1984, will thus hold the Trophy for another period. Perhaps in June, we may see a real battle go on amongst the novice operators in an endeavour to wrest the Trophy away from the south east of South Australia.

You may note my reference to the fact that the winning score is stated as a composite of the Phone and CW score. At the 1985 Federal Convention, my report included the proposal that the winner of the Keith Howard VK2AKX Trophy must have submitted both a Phone and CW log in the contest. This proviso has been written into the rules and I must therefore again emphasise that the trophy can only be won by an operator entering both the Phone and CW sections. I do not have very much more in the way of comment on the contest this year except to say that the number of novice operators entering the CW section was most disappointing.

Virtually all of the letters received with logs submitted made comment on the lack of novice operators on CW. In fact, some were somewhat critical in their content regarding novices passing the test and then dropping CW altogether. Some suggested that the qualifying speed for the novice examination should be increased so that when the operator finally went to air, he might have that little more skill and confidence. One other comment made was to the effect that here are people who are constantly clamouring for additional privileges and yet they apparently are not capable, in the main, of meeting the current requirements of the licence they now hold, otherwise more of them would be displaying their proficiency and their improvement over the basic standard in CW operation.

So, it's over to you! Just what is your opinion? I certainly hope that if you decide to express same, you will do so in a rational manner, and not let yourself become carried away with emotional argument. Once again, I might point out that the only evidence I can provide is that contained in the contest results, which certainly seem to bear out much of what is contained in the criticism I have received.

I might finally comment that most of the logs submitted were of good standard with some particularly neat logs, obviously computer generated, such as from VK2CZX and VK5NEW, whilst some excellent manually produced logs were received from stations such as V15ALE, a club entry operated by Carol VK5PWA, and the entry provided by Len VK3JNL.

I must also mention the excellent manually produced log submitted under the call sign

VI5JSA, the South Australian Jubilee call sign, which was operated by John VK5JS. With the special call sign, he scored the highest single entry with 758 points and deserved a special mention as overall top scorer in the contest.

Here now are the full details of individual scores.

VK NOVICE CONTEST INDIVIDUAL SCORES FOR 1985

PHONE/	PHONE/FULL	CW/FULL
NOVICE	CALL	CALL
5NOD	691	2CD5
3PDG	688	5BJA
3NLS	686	632
3NLS	571	632
5NEW	50X	388
7NCP	515	3YZ
7NAI	486	2CZK
3NLS	481	3COP
3PRN	281	2EZB
4NUN	291	5FF
4NHF	269	2BQS
5NRS	260	1LF
3VDG	212	VI3KS
7NBF	211	5GZ
3KCT	170	4AOE
5NIA	164	VI3XB
CW/NOVICE		99
4NUN	98	3XF
2PUG	92	5AGX
5NOD	48	6ATE
3PDG	4	4WIC
LISTENER		
L30396	616	
L30371	84	
L60036	81	

NOTE: All call signs are VK except where stipulated.

Total contest entries: 38 phone; 18 CW; three SWL (12 combined Phone CW and six Club). Grand Total — 59. This compares with a total of 40 entries in the 1984 contest.

Well, that is about all for this month. Maybe a shorter column this time will make up for the extremely large number of pages submitted last month. I can certainly do with more time available with so many matters to keep under consideration. By now, I would hope that you will have discussed thoroughly within your Divisional organisations any business you want aired at the coming Federal Convention and properly briefed your representatives on such subjects.

In the meantime, I will be busy preparing my annual report and recommendations to the Federal Council. I would trust that there will be little in the way of contentious matters dealing with contests this year.

I would also hope to have a contact with you during the John Moyle Memorial Field Day Contest, although I will only be able to take part in the six hour section.

If you run across my call sign you may wish to provide a brief comment or two, about the contest and like matters, although if business is brisk I will, no doubt, be appreciative if you can wait for a quiet spell. By the way, I would certainly be interested in receiving any photographs of Field Day operations for publication in the magazine. I received a lovely photograph from Gill VK5YL, last year. She was standing in front of the wind generator.

Meanwhile, I wish you all good luck with your contest operations.

73 de Ian VK5QX.

CLARA AC/DC MYSTERY CONTEST 1986

This contest is sponsored by the Canadian Ladies Amateur Radio Association. It starts at 1800UTC on Tuesday 27th May and concludes 1800UTC, Wednesday 28th May 1986.

The AC/DC Mystery Contest is open to all YL and OM amateur stations. Each CLARA station may be worked twice, once on CW and again on phone, the same mode on two different bands. Exchange name, serial number beginning with 001, RST, QTH, and if a CLARA member. Three unidentified

"Mystery" stations will be operating during the contest.

Suggested frequencies for phone are: 28.488; 28.658; 21.300; 14.160; 14.280; 7.150; 3.775 and 3.900MHz.

CW frequencies are: 28.035; 21.035; 14.035; 7.035 and 3.690MHz.

VK stations note some of these frequencies are outside our bands.

All contacts must be made in accordance with operator and station regulations. No net, lists or cross-mode contacts.

Scoring — for the base score, CLARA members score one point per contact with non-members, two points per contact with CLARA member, three points for every CW contact.

Non-members must work CLARA members only. For base score count two points per contact, three points for each CW contact. Multiply the base score by the number of Canadian Provinces/Territories worked for the total score. The Contest Manager will add ten points to the base score of each log for every Mystery station worked.

DX station winners will be eligible for a certificate.

All logs submitted are eligible for the Mini-Prize draw. Logs must show Date/Time UTC; Band; Mode; Call Sign; Worked; Report and Serial Number Sent; Report and Serial Number Received; Name of Operator Worked; QTH and Points Claimed. Logs also to show full name, call sign and address of operator, and full score claimed. No carbon copies. No logs will be returned. Contest Manager's decision will be final. Logs must be received by 15th July 1986.

Mail logs to the Contest Manager, Muriel Foley VE7LQH, RR #1, Pender Island, BC, Canada V0N 2M0.

H F PACKET RADIO

David Pilley VK2AYD

15 Forest Glen Crescent, Belrose, NSW. 2085

For those interested in HF Digital Communication, the following frequencies are referenced and appear to be used world-wide: 7.097, 10.147, and 14.103MHz. The most active is by far 14.103MHz.

Locally in Australia, 3.630 and 3.642MHz have been referred to, but, as yet, the writer has not heard any active Packet operations on these frequencies.

The protocol used is Amrad AX-25 — older equipment uses Version 3.3, whilst the more advanced use Version 5.5. Both are compatible.

Stations in the USA use only 300 Baud on HF and operate on LSB but Australia, New Zealand and elsewhere also use 1200 Baud, USB, on 14.103MHz. This is quite convenient as it permits two QSOs or more to take place on the same frequency, which is really being frequency-conservative.

During December 1985, the following stations were heard or worked on 14.103MHz: VK2AQY, YJ8RG, VK2AYD*, ZL1AOX, VK2BBB, JA1DSI, VK2BIS*, VK2BIZ, VK2BVST*, and VK2HL.

* denotes stations which are known to operate on both 300 and 1200 BPS.

Both YJ8RG and JA1DSI operate beacon stations and YJ8RG is on most evenings around 0700UTC.

The JA1DSI beacon is only on 300 BPS LSB, 14.103MHz and reads:

Beacon JA1DSI. This is JA1DSI in Sugarnami Tokyo AX.25 V3.3.

Remember, if you put out a beacon it is necessary to keep the characters short, no more than 40 are recommended, as weak signals become very hard to decode.

The writer would be interested to hear from other stations that are active with packet radio in Australia and New Zealand. Please write to the above address or contact the writer on air.



Awards

A brief summary of the award program of Reseau des Emetteurs Francais will be given in the column this month. However, I can supply the complete leaflet on receipt of a self-addressed envelope.

The first, *Diplome des Departements Francais de la Metropole (DDFM)* is for working 40 or more departments out of a total of 95, the department number being given by the first two digits of the five-figure post code.

Diplome des Provinces de France (DPF) may be claimed for contacting all 22 provinces — a province is a group of two or more full neighbouring departments. The REF leaflet has a full list.

Diplome de l'Univers Francophone (DUF) is for QSOs with countries which had, or still have French connections, ranging from DUF1 (five countries in three continents) to DUF4 (20 countries in six continents).

These three awards have five-band and SWL versions.

AUSTRALIAN DXCC NEW MEMBERS (since the last listing published in AR, July 1985).

Number	Call Sign	Name	Countries
PHONE	ZSSCO	Reg Sweet	104
334	VK4VIVS	Noel Capney	100
335	VK3IRI	KM Maroney	103
336	VK5GZ	Lindsay Collins	100
337	YB0BZZ	E Suryadarma	195
338	VK4ATQ	Brian Pittman	119
340	VK4KHZ	Bill Wallace	121
226	VK4KHZ	Bill Wallace	125
229	VKGHO	J L Hawkins	107
230	VK3CNF	Norman Fairweather	112
231	VK3DP	John Kelleher	104
232	VK2COP	Bill Martin	102

There were no CW or RTTY applications for this award.

WIA VHF AWARDS (since last published In AR, July 1985)

These are Worked All States (VHF) which was first issued in October 1949; VHF CC which was first issued in January 1962; and Worked All VK Call Areas (VHF) first issued in January 1973.

Until recently, all awards issued were for six metre contacts, but now the two metre barrier is being overcome. I gather from those who were around at the time, that it was originally envisaged that VHF DXpeditions might have to be made to mountain tops and to State borders to secure these awards. On two metres, VK8 was the stumbling block for some years. At length, Steve VK2CH mounted two expeditions to the Northern Territory, Arnhem and Cape York areas in working VK6 and VK8. He received the WAS (VHF) two metre award in April 1984. Others adopted the voluntary restriction of working only from their home-base stations, and they also have now successfully Worked All States on two metres. Congratulations to Colin VK5GRO; Eric VK5SLP and Ken VK3AKK on achieving your objective after 25 years.

Number	Call Sign	Name	Band
WAS (VHF)	VK5GRO	Colin Moore	Two
160	VK5SLP	Eric Jamieson	Two
181	VK3AKK	Ken Jewell	Two
182	VK4VP	E Penikis	Six
25	VK2ZRU	R Usher	Six

There were no applications for VHF CC.

RNARS AWARDS

The Royal Naval Amateur Radio Society sponsors five awards which are available to non-members.

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA. 5014

MERCURY AWARD

This award is to encourage radio activity between members and other amateurs. One point is gained for each contact with a member per band, with two points for special event stations, such as GB3RN. For VK stations, five points is enough for the basic award, and band/modo endorsements are available. Send log extract and one pound to the Mercury Award Manager, Don Walmsley G3HZL, 3 Meon Court, 609 London Road, Isleworth, Middlesex, England.

HAMPSHIRE COUNTY AWARD

This is for contacts between stations in the county of Hampshire and other amateurs. Again, for VK, five points gains the third class award, one point per station contacted. Send log extract and one pound to Don Cowley G2GM, Bay Sound, Freshwater, Isle of Wight, England.

WORLD-WIDE AWARD

This is gained by working RNARS members in 10 countries in at least two continents (basic award). Log extract and one pound 50p to Mark Mullins, 24 Rigby Close, Waddon, Croydon, DR0 4JU, England.

ENDEAVOUR AWARD

This is for contacting RNARS members residing in Australia. Scoring is one point per member contacted, per band, with two points for VK3RAN. VK amateurs need 15 points for the basic award. Log extract and \$1.50, or seven IRCS to the Award Custodian, Ron Catmur VK5PY, 142 Woodford Road, Elizabeth North, SA. 5113.

HMAS CANBERRA AWARD

Finally, in this group, the HMAS Canberra award requires 10 QSOs with at least four VK1 RNARS members, and one special station VK1RAN or VK3RAN. Log extract and 10 IRCS to Barry Bennetts VK1BB, 48 Chucuba Crescent, Girrawang, ACT 2617.

The World-Wide and Endeavour Awards are available to SWLs also.

KUWAIT AWARD

This award is sponsored by the Kuwait Amateur Radio Society and is available to amateurs and SWLs for contacts with/reports confirmed by 10 different Kuwait stations. Any authorised band/modo may be used, and there is no date limitation, but all contacts must be from the same location; via within a radius of 100km from the original location, and using the same call sign. A list showing full details of contacts, certified by the award manager or secretary of a national society should be sent, together with five IRCS to the Award Manager, Kuwait Amateur Radio Society, PO Box 5240, Safat, Kuwait, State of Kuwait.

ROYAL JORDANIAN AMATEUR RADIO SOCIETY

Did you work five Jordanian stations using the prefix JY50 during the 50th birthday celebrations for His Majesty King Hussein? If so, you are eligible to receive a commemorative certificate. The special prefix was used during the period 7th-21st November 1985. A certified log extract and 10 IRCS, or US\$5 is all that is required to the Royal Jordanian Amateur Radio Society, JY50 Celibration, PO Box 2353, Amman, Jordan.



WICEN News

NDO ANNUAL EXERCISE COMCOORD 85

WICEN participated in the annual Natural Disasters Organisation Exercise COMCOORD 85, which was held last November. The exercise scenario involved simulated natural disasters in the Northern Territory and Queensland. A cyclone situation was portrayed for Darwin and a "Jumbo" airliner crash in outback Queensland. Due to the sensitive nature of these scenarios, should messages get misconstrued, amateur radio involvement was limited to a communications demonstration and passage of innocuous, yet factual reports. The net ran for over three hours and passed a number of messages satisfactorily achieving the WICEN aim.

Thanks are due to VKs: 1DG, 1ZAH, 4W1/4KD, 4ACU, 4AGU, 4AGQ, 4OV, 4LZ, 4QL, 4IQ, 4UX and 8HA for devoting time and effort to this exercise on a work-day afternoon.

CHANGES TO WICEN CO-ORDINATORS

The SA Divisional WICEN Co-ordinator changed from John Mitchell VK5JM, to Bill Wardrop VK5AWM, in October 1985, and the WA Divisional Co-ordinator exchanged from Syd Jenkins, to Jack Shurmer VK6QS, in June 1985. It is worthy to note that Syd gave nearly nine years service to the position, thanks for the effort.

WICEN 80m CALLING FREQUENCY

It has been brought to my notice that the 80 metre WICEN calling frequency adopted at the last Federal Convention, namely 3.600MHz, is also the switch on default setting for a number of micro-processor controlled transceivers. These operators appear to have a habit of switching on and calling HAARLO to check their RF output and VSWR before listening on the frequency. This is distracting to WICEN and, furthermore, makes the frequency a very popular one to call CQ on. Consequently, it has been suggested the WICEN Calling Frequency be changed to 3.605 or 3.610MHz. Any views on this proposed change would be appreciated.



QSP

AVIATION SATELLITE LINKS

The International Maritime Satellite Organisation, INMARSAT, planned to have up to nine new satellites in orbit in the next decade.

INMARSAT was set up as an inter-governmental agency in 1979 to create a global satellite communications system for shipping.

It now has 44 member nations and is developing a second generation of satellites capable of handling aviation as well as maritime communications.

An aeronautical satellite network could also enable airline passengers to make phone calls or use their personal computers while flying anywhere except over the polar icecaps.

This is the sort of service currently available through INMARSAT's maritime communications network which provides voice, data and facsimile links to 4 000 ships and oil rigs world-wide.

It is now moving into aeronautical satellite communications which will provide airliners with improved communications for weather, and air traffic reports in areas where conventional radio reception is poor.

Computers on board airliners could also be linked via satellites to earth stations, making flight recorders virtually redundant by providing a ground monitor of all information stored in them.

EXPO 86

Noted Norwegian explorer and anthropologist, Thor Heyerdahl will be a key speaker at the third Expo 86 symposium on 8 and 9th May 1986. Dr Heyerdahl is known for his Kon-Tiki, Ra and Tigris voyages. In 1947, he crossed the Pacific on a balsa wood raft to prove the theory that Peruvian Indians could have settled in Polynesia.

From 7-13th September, an international conference on satellite and fibre optics communications, along with a computer exhibition will be a feature at Expo.

Spotlight on SWLing

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas. 7250

Already a quarter of the year has nearly gone! Time literally slips away from me these days. Conditions have improved a little, yet there are the occasional days when there are ionospheric disturbances. We now have entered into the autumn phase, with the major international broadcasters making their seasonal alterations to their frequency schedules. The M-86 period commences on Sunday, 2nd March, at 0100UTC. This period will last until 4th May.

SEVERE IONOSPHERIC PROPAGATIONAL DIFFICULTIES

As I am compiling these notes in mid-January, it is too early to predict what conditions should be like. I would expect though, that the higher frequencies, such as 21MHz, will have dropped off in our local evening hours. We will also be hearing signals coming from the Long Path (LP) much earlier, particularly on the lower frequencies at around 0530UTC.

Because of severe ionospheric propagational difficulties, the BBC External Services made substantial alterations to their Australasian services. They have commenced utilising their Singapore Relay Site to broadcast to this region from 0600 to 0915UTC. Simultaneously, they dropped their old faithful channels of 5.975, 7.150 and 9.640MHz, all from UK sites. The Kranji relay can be found on 11.955 and 15.360MHz. The latter channel is putting in remarkable signals to SE Australia. However, 11.955MHz is a little disappointing, yet I am reliably informed that it may be putting in good signals in Western Australia; Northern Territory and possibly Queensland. The 15.360MHz channel, however, seemingly hold-up very well. 11.955MHz is fairly weak, with a station broadcasting in Japanese language co-channel.

BUDGETARY CUT-BACKS

Incidentally, the service on 15.070, which comes in very well later in the evening hours, is continuing to be excellent. I find that 17.790MHz can also put in quite good signals, although it is primarily beamed to Africa and South Europe. The Kranji Relay on 11.750MHz is disappointing, with Radio Beijing causing splatter from 11.755MHz between 0900 to 1025UTC.

The BBC External Services recently came to the rescue of Greenwich Mean Time. Because of budgetary cut-backs, the Royal Greenwich Observatory, in Surrey was unable to purchase replacement tubes for their Caesarianum clock. The BBC has been broadcasting the Greenwich Time Signals since 1924, and decided to help the Observatory with finance to help it get these tubes and continue their service of time signals for the next five years. It certainly would have been very unusual for the time-pipe from Greenwich to disappear from the "Beep". Incidentally, it is true that the chimes from Big Ben, that one hears on the quarter-hour are live and not recorded. There is a microphone within the clock tower and you can occasionally hear extraneous noises from the nearby Westminster traffic, in the background. When restoration work was going on in the Clock Tower, the sounds of hammering and sandblasting were clearly audible.

TALKBACK

Peter Wolfenden VK3KAU, who has an occasional segment over Radio Australia's Talkback, has forwarded me the current times for this program. You can hear it on Saturdays at 0310; 0810; 1330; 1612 and 2112UTC. If you would like details of Frequency Schedules or a Program Guide, I do suggest you contact Radio Australia, GPO, Box 4262, Melbourne, Vic. 3001.

The Australian Radio DX Club can now be contacted at 404 Mont Albert Road, Surrey Hills, Vic. 3127. This is the official address until further notice and is due to postal difficulties they have been encountering of late.

FREQUENCIES AND TIMES

The 22 metre international broadcasting allocation is seemingly alive with plenty of signals, although it was not officially to come on stream until 1969. The USSR has been the one to make extensive use of this allocation, but now other nations are rapidly gearing themselves up to use the new allocation. Here are the details of known stations operational on the allocation from 13.800 to 13.800MHz. At present, there are quite a number of utility services also occupying this allocation as well.

13.605Vladivostok — 0800-0900UTC Orbita-5 programs in Russian.

Prague — 1630-2126UTC in Arabic, English and French, to Africa.

13.615Dacca — 0630-0830UTC in Bangla and English.

13.625PM Yerevan — 0430-0500UTC Hausa, 0500-0700UTC WIS to Africa.

RM Novosibirsk — 0400-1100UTC in Chinese.

13.635Kalinin — 1000-1100UTC in German.

13.650Pyongyang — 2200-0050UTC and 0400-1050UTC in various languages.

13.655RM Kalinin — 0700-1300UTC WIS.

13.665RM Simferopol — 0730-1500UTC WIS.

13.670Dacca — 1600-1800UTC in Bangla and English.

RM Moscow — 0200-1030UTC various East Asian languages.

13.690RM Kalinin — 1300-1600 Indian dialects and languages.

13.700Pyongyang — 2200-0500UTC various languages.

Baigadah — 0400-1000UTC in Arabic.

13.705RM Simferopol — 0700-1430UTC with WIS.

13.715Prague — 1430-1625UTC in English and Czech for Asia.

13.725RM Moscow? — 1330-1500UTC in SE Asian languages.

13.735Moscow SSB Feeder — between 0600-1400UTC in Russia with Domestic Relays.

13.770RN Flevoland — 1430-1625UTC English and 1530-1625UTC Arabic.

13.797Reykjavik Iceland — 1215-1245UTC in Icelandic to Europe and 1315-1345UTC to North America. Only 3kW, also USB. Good catch if you hear it!

The following information came from the January issue of ADXN and from my own listening, to which I am indebted for the site for RM.

* Baghdad is also on 9.610MHz from 0400 and from 0600 on 9.745MHz simultaneously, with domestic programs.

Well that is all for this month. Until next time, the best of listening and 73 — Robin.

AR



Intruder Watch

Bill Martin VK2COP

FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW. 2077

I begin the column this month by thanking the people who gave active support to the Intruder Watch in December 1985. They were: VK3NET; 2BQZ; 2KP1; 2PS; 3XB; 3XU; 4KX; 4BHJ; 4BN; 4KHZ; 5BJF; 5GZ; 5TL; 7RH and Mr G H A Bradford.

TAXI DRIVERS IN ASIA

You may remember last month, I mentioned a problem which has appeared on the 28MHz band, and which, if left unanswered, could well become a major problem in the future. Refer to the activity on this band by taxi drivers in Asia. A note from Bob ZL1BAD, the IARU Monitoring System International Co-ordinator tells me that he has made overtures to David Penkin 9Y1RH/VK3QV, Chairman of IARU Region 3, to have the Hong Kong Amateur Radio Society look into the matter.

Lindsay VK5GZ, the VK5 IW Co-ordinator, has reported activity from a station on CW signing XSG/34/77, etc. This station is Shanghai Radio, which is a fixed coastal station, and shouldn't be appearing on 21.059MHz.

STATISTICS FOR DECEMBER

Statistics for December 1985 are as follows:

312 broadcast intruders; 151 CW intruders;

135 RTTY intruders; 79 other modes and 73 intruders identified.

Also, Steve VK2PWS, was worried about a carrier appearing on 28.262MHz which he could not track-down as a listed beacon. However, he subsequently discovered that it is indeed VK4RTL, which identifies in FSK.

AWARDS

I am pleased to hear from Col VK4AKX that both Gordon VK4KAL, the VK4 IV Co-ordinator, and Norman VK4BHZ, a stalwart of the Intruder Watch, were both recipients of the WIA 75th Anniversary Medallion. Congratulations to both of you!

PERSONALLY SPEAKING

Just a couple of personal items to mention in passing. I am very nervous at the moment as I have 109 QSL cards en route to the USA to the ARRL . . . I hope they make the return journey okay as I wouldn't like to have to go and get them all again. And also, I can tell you that you don't know what the word apprehensive means until you have an intermittent fault in your computer! (which I have). Sure is exciting — or is that the right word?

WHERE DO THE MAJORITY OF 7MHz INTRUDERS COME FROM?

Radio Tirana, on 7.090MHz, is now sharing the frequency with Radio Pakistan . . . (this column is becoming more of a short-wave-listening column . . . whatever happened to the amateur allocation of 7.000 to 7.100MHz ?? ?).

Jamming stations still prolific on 7MHz . . . the Vee beacon is still being heard on 7.003MHz . . . Col VK4AKX observes, and correctly, that 99 percent of intruders on the 7MHz band come from Russia — surprise, surprise. I have often said, "If the USSR would observe the regulations, we would have almost nothing to worry us on the amateur bands, and could get on with the business of trying to contact other amateurs".

Keep trying for the Intruder Watch Net on 3.959MHz, on Wednesday evenings at 1000UTC, when daylight saving is in effect, and 1030UTC Australian Winter Time.

See you next month, and please think of the Intruder Watch if you hear something that shouldn't be on the amateur bands.

AR

TELESCOPIC MASTS

The Clark Masts QTM and SQTM series are very lightweight, air-operated telescopic masts. They may be extended by hand pump, attached or remote, or when vehicle mounted, by battery powered power pack. They are normally not rotatable and may be locked when extended.

Eighteen models are available in all QTM ranges, from 4 to 12 metres, with headload capacities up to 10kg. SQTM range up to 15 metres with 10kg headload. The approximate weight of a mast with hand pump is between 6 and 20kg. These masts have many applications some of which are raising lightweight omni-directional antennas, temporary site floodlighting, meteorological instrument supports, forest rainfall measurement, air pollution monitoring, all forms of scientific investigations, crop spraying swath markers, accident warning high level beacons, or observation using a COV Camera.

For further information please contact Scalar Distributors Pty Ltd, Head Office, 20 Shelley Avenue, Kilsyth, Victoria 3137. Phone (03) 725 9677 or Branch Offices, Sydney (02) 502 2888, Brisbane (07) 395 1188 or (07) 395 1817, Perth (09) 446 9177.

AR

COAXIAL CONNECTORS

Scalar Industries now offer a comprehensive range of coaxial connectors. The range includes - "P push on connectors for use on small RF Coaxial cables which are used extensively on television aerial systems and electronic testing equipment, UHF (PL259) general purpose connectors for non-constant impedance for use with coaxial cables, RG58, RG59, RG8, RG213, UR57 and UR67; BNC Connectors which feature a quick disconnect, bayonet lock coupling — they are small, lightweight connectors suitable for use with smaller RF coaxial cables and will operate to a peak of 500 volts and are weatherproof, TNC connectors — are screw type coupling versions of the BNC series but they have the advantage of better performance under vibration and better weather-seal since greater pressure can be exerted on the gasket by a screw type coupling nut.

The N series are a line of low voltage, constant impedance connectors for use with small and medium size RF cable, they are weatherproofed, rated at 1 000 volt peak, and are suitable for use with frequencies up to 10.000MHz.

Crimp type connectors are available in UHF; BNC, TNC, and N types and these crimp reduce assembly time and improve the complete cable assembly. Crimping is faster than soldering and cannot melt or deform the dielectric.

Scalar also have adaptors for connecting the different series connectors to one another and a range of coaxial cables.

For further information please contact Scalar Industries Pty Ltd, Head Office, 20 Shelley Avenue, Kilsyth, Victoria 3137. Phone (03) 725 9677 or branch offices, Sydney (02) 502 2888, Brisbane (07) 395 1188 or (07) 395 1817, Perth (09) 446 9177.

AR

DATA MANUALS ON JAPANESE SEMICONDUCTORS

The 1985 CO Data Manuals, with information on Japanese Semiconductor devices have always been hard to obtain. Fortunately, IMARK Pty Ltd have again secured a limited quantity from Japan. Brief details of the various 1985 manuals are as follows:

"The Transistor Substitution Manual" lists equivalent Japanese transistors by makers for 2SA, 2SB, 2SC and 2SD transistors. Information on whether the transistor is discontinued, principally for renewal purposes only, available by custom order only, or if the manufacturer is suspended is included. (282 pages)

"The Diode Manual" provides specifications and package details for Japanese diodes and includes zener, small signal bridge rectifier, reverse polarity and power diodes. (387 pages)

"The FET Manual" details specifications and package details on Japanese FETs (2SK, 3SK and others). Performance charts and typical circuit configurations are often supplied. (348 pages)

A R Showcase

"The OP AMP Manual" (Parts 1 and 2) provides detailed specifications and package information for (Part 1) Analog Devices, Ancom, Brown Burr, Datel-Intersil Inc, Intech, Function Modules, Teledyne Philbrick, Zetek, Hitachi, Matsushita, Mitsubishi, NEC, JRC, CR Box, Toshiba, (Part 2) Advanced Micro Devices, Analogue Systems, Fairchild, Harris Semiconductor, Intersil, Motorola, National Semiconductor, Philips, Precision Monolithics, Raytheon, RCA, SGS Ates, Signetics, Siliconix, Teledyne Semiconductor and Texas Instruments devices. (Part 1, 375 pages, Part 2, 294 pages)

"The Linear IC Manual" provides technical specifications, and package details of Japanese manufactured Linear Integrated Circuits. Typical or suggested circuit designs are usually included with the details for each particular IC. (390 pages)

"The TTL IC Manual" provides technical specifications, package details and lists worldwide manufacturers of the particular device. The manual includes details for 7400 series, 74SL series and 74S series. (412 pages)

"The C-MOS IC Manual" provides technical specifications, package details and world-wide manufacturers for 4000B series, 4500B series, and 74HC series devices. Truth and timing details are often included. (327 pages)

"The Memory IC Manual" provides technical and package details, has tables of similar devices with their specifications and lists most major worldwide manufacturers devices including Japanese devices. Devices covered include Static RAMs, Clocked RAMs, Dynamic RAMs, P-ROMs, and UV-EPROMs. (382 pages)

"The Power & Industrial Semiconductor Manual" provides technical and package details as well as some typical circuits for power devices. Most devices listed are of Japanese origin. (375 pages)

"The Interface IC/Device Manual" provides technical and package details for over 400 devices used mainly with computers. Products made by Fairchild, Motorola, Signetics, Texas Instruments, AMD, National Semiconductor, Hitachi, SGS, Sanyo, Mitsubishi, Toshiba, Sprague, and NEC are listed. (221 pages)

"The A/D-D/A Converter IC Manual" provides package outlines and technical details on nearly 400 devices made by Micro Networks Corp, Beckman, Analog Devices Inc, ICL Data Device Corp, Datel-Intersil Inc, National Semiconductor Corp, Burr-Brown Corp, Matsushita, Advanced Micro Devices Inc, RCA Corp, Sony, Precision Monolithics Inc, Hitachi, Harris Co, Intersil Inc, Fujitsu, Motorola Inc, Mostek Corp, Oki, Signetics Corp, Plessey Ltd, Toshiba, TRW Inc, Telmos Inc, Thomson Semiconductors, Ferranti Electronics Ltd, and NEC. (293 pages)

While each individual manual would provide a wealth of information for technicians and engineers etc, the complete set would provide an almost complete library of information on Japanese Semiconductor devices.

The manuals are priced at \$12.50 each plus \$5.00 post/packing for 1-3 manuals.

Further information is available from IMARK Pty Ltd, 167 Roden Street, West Melbourne, Victoria 3000. Phone (03) 329 5433.

AR

SCANNING FULL BAND RECEIVER

The new IC-R7000 uses advanced technology to achieve continuous coverage from 25MHz to 1 300MHz. No additional module is required to achieve coverage up to 2 000MHz. CPU based optical tuning provides 100Hz steps over the entire range. This is enhanced by using a direct entry keyboard for frequencies that are known to the user or precise tuning via a rotary system that offers tuning speeds of 0.1, 1.0, 5.0, 10.0, 12.5, or 25kHz. The frequency selected is always displayed on a seven digit, dual colour fluorescent readout. The mode selected is also displayed on this readout.

The R7000 uses multi-conversion techniques for reception of FM (both narrow and wide band), AM and SSB (upper and lower). 99 memories are available to the user, each capable of recording



mode and frequency. Further, the memory can record active frequencies while in the scan mode without disabling the scan. Later, the memory may be integrated for active frequencies. Scanning may be done by mode, programmed scan, full scan, selected scan, memory channel scan, auto write programmed scan and priority scan.

An optional infra-red remote control model RC-12 will control all the functions of the R7000. This will be available shortly.

Outstanding performance of the R7000 places the radio in the professional class. The spurious and image rejection performance is better than 60dB and sensitivity is typically better than 0.5uV for 12dB sinad. The radio is powered from either 13.8V DC or mains supply. The compact size of the R7000 will invite mobile use. The IC-R7000 is a perfect companion for the now famous HF receiver model IC-R71A.

ICOM (Australia) Pty Ltd will happily provide further data on this new receiver. The address is 7 Duke Street, Windsor, Victoria 3181 or phone (03) 512284.



DISTRIBUTION AGREEMENT

Alfatron has announced that it has secured distribution rights to the range of soldering equipment manufactured by Zevatron in West Germany.

The range of equipment represented is from large wave soldering installations such as the MPS-300 series down to solder baths, dip pots and hand-held irons. One item that will be very attractive to potential soldering machine buyers is the MPS-200 series of modular soldering machines. This series features the patented modulated Chip Wave design that is unique to Zevatron equipment. This is specifically intended for Surface Mount Devices especially where the device packing density is very high.

For those interested in modern drag soldering, Alfatron is offering a free 16-page re-print describing techniques and equipment. For further information contact Alfatron, 1761 Ferntree Gully Road, Ferntree Gully, Vic. 3156, or phone (03) 758 9000.

AR

JA1YWX/JD1 SATELLITE DXCC SERVICE

Date — 27th March to 3rd April 1986.
Place — Chichijima-I, Ogasawara (Bonin) Island.
Band — 1454/35MHz, AD-10 Mode-B, HF band.
Mode — SSB and CW.
Call Sign — JA1YWX/JD1.
QSL Card — Via the Bureau or an SAE and ICRCS to JM1LPN.

Delegate — Yutai Katoh JM1MCF, 2-21-2 Kakinokizaka, Meguro-ku, Tokyo 152 Japan.

WIA VIDEO LECTURES NOW EVEN MORE WIDELY AVAILABLE!

FEDERAL

John Ingham VK5KG
VIDEOTAPE CO-ORDINATOR

37 Second Avenue, Sefton Park, SA. 5083

Now every radio club can provide their members with quality technical lectures on subjects covering the whole range of amateur radio activities by taking advantage of the WIA Federal Videotape Library. You will find this a boon, particularly if your is a country club which often has difficulty obtaining a variety of expert lecturers for regular meetings.

Individual amateurs and librarians should take note of the new Duplication Fees at the end of this article.

For radio clubs affiliated with the WIA, it is inexpensive and easy. Here is how it works:

Except for those titles for which the WIA does not hold a copyright licence, all you have to do is . . .

. . . Supply the Videotape Co-ordinator with a video-cassette of an available format

Enclose another stamped, return-addressed padded mailbag the program is free for you to use in support of amateur radio in your area . . . including copying and transmission over the air if you wish

Those programs which are copyright are available only on loan. To obtain any of them send with your request . . .

Information about your preferred VCR format

A statement signed by a responsible officer of your club that "I undertake that while

(Program Title) is assigned to me, I will not allow it to be transmitted over the air, nor copied by any means whatsoever, and that I will return the same promptly after showing."

A stamped addressed padded mailbag suitable for cassettes of your preferred format.

The present available formats are . . .

U-MATIC — size 260 x 173 x 40mm, mass 900 grams (to institutions only). Standard play — one hour maximum only. Standard sound only on channel 2 (No Dolby).

VHS — size 200 x 110 x 30mm, mass 350 grams. Standard play four hours maximum, or long play eight hours maximum as requested. Standard Sound — Dolby On or Off as requested. Hi-Fi FM Sound also present on all VHS cassettes.

BETA — size 160 x 100 30mm, mass 300 grams. Standard play three and a quarter hours maximum only. Standard sound only (No Dolby).

VIDEO 8 — size 103 x 68 x 20mm, mass 80 grams. Standard play one and a half hours maximum, or long play three hours maximum as requested. Hi-Fi FM sound is standard (No Dolby).

Obviously, the smaller and lighter the cassette, the less postage.

* NOTE: Be sure to request Standard or Long Play, Dolby On or Off.

NOTE TO INDIVIDUAL AMATEURS

Since the inception of the WIA Federal Video Service, cassettes have been made freely

available to all comers, especially isolated amateurs. However, recently there has been a rapid rise in the number of requests from individual amateurs, some asking for over 10 hours of programs at one time.

Video duplication is a full-time, one-at-a-time operation for which the costs of maintenance of the equipment is not small. Obviously, the Service is much more economical if, say, one tape is seen by 30 members of a club than if each of the 30 members were to request their own personal copy. If every member of the WIA requested just one program, it would take about four years at 40 hours a week to service.

So, in an effort to encourage requests from groups of amateurs rather than individuals, from now-on a Duplication Fee of \$2 per hour, or part thereof, will be payable in advance for all requests from individuals. All such fees will go towards upkeep of the duplication equipment.

NOTE TO LIBRARIANS

A number of educational institutions have already availed themselves of the technical lecture tapes from the WIA. While this service will continue to be available, from now-on a Duplication Fee of \$10 per hour, or part thereof, will be payable in advance by all institutions not affiliated with the WIA. All such fees will go towards the production costs of future Technical Lectures.

WIA VIDEO TAPE PROGRAM TITLE LISTING

NOTE:

... denotes Copyright: no copy service is available.

... denotes Originally Converted to PAL from NTSC by WB2LLB — some flicker is evident.

Standard Formats: VHS and Video 8 are available on Extended Play, Dolby and Hi-Fi sound — please specify preference when ordering. Also available: Standard Beta.

TITLE (in chronological order within each LECTURER PROD subject grouping)	PROD	APPROX TIME in MINs	COL/B&W	YEAR MADE/19..	DESCRIPTION & OTHER INFORMATION
GENERAL PROMOTIONAL FILMS					
— The Hams Wide World	ARRL	30	Col	'69	Superseded by "The World of Amateur Radio"
— This is Amateur Radio	ARRL	15	Col	'70	Pitched at teenagers
— Moving up to Amateur Radio	ARRL	15	Col	'75	Pitched at CSWers
— 72JRL DX-pedition	JARL	60	Col	'76	General Amateur Radio Interest: LOAN ONLY
— This Week Has Seven Days looks into	HSTV	25	Col	'78	Pitched at Teenagers: includes science, health, foliage
— Amateur Radio — The National Resource of Every Nation	VK5KG	6	Col	'79	Encapsulates AR: good for public exhibition
— The World of Amateur Radio	ARRL	30	Col	'82	Pitched at Adult Level
HISTORIC INTEREST					
— Wireless Telegraphy — circa 1910	?	10	B&W	'10	Archive Material courtesy David Wardlaw VK5ADW Archive Material
— Opening of Burleigh Griffen Building — SA HQ	VK5KG	50	Col	'77	
— History of ATV in South Australia	VK5KG	30	Col	'80	Archive Material, still building
— TV in Australia 1978 — made for British ATC Circuits	VK5KG	30	Col	'78	Archive Material
— ATV in United Kingdom 1978 — reply from BATC	GBCJS	30	Col	'78	Archive Material
— Heard Island DX-peditions	Ch 2,7,8&10	20	Col	'84	Archive Material: No Loan or Copy Available
ANTENNAS AND PROPAGATION					
— G6CJ's Aerial Circus	G6CJ	WIA	90	B&W	'77
— Wire Antennas	VKSRG	VK5KG	40	B&W	'78
— Loaded Wire Antennas	VKSNN	VK5KG	50	Col	'80
— Getting Started in Understanding the Ionosphere	VKSNX	VK5ZBD	50	Col	'83
SPACE — GENERAL INTEREST					
— Apollo 13 Disaster	VKSJM	VK5KG	90	Col	'80
— SSTV Pictures from Space — Voyager	VKSJM	VK5KG	15	Col	'83
— Amateur Radio's Newest Frontier	ARRL	24	Col	'83	Australian Tracking Procedure Satellite Apollo 13 SSTV Pictures Converted from Satellite Fly-Past
— AUSSAT — Australia's Domestic Communications Satellite	VKSJM	VK5KG	62	Col	'84
AMATEUR SATELLITES					
— Getting Started in Amateur Satellites	VKSAGI	VK5KG	60	Col	'83
— An Introduction to Amateur Satellites (Part 1)	VKSAGR	VK5KG	60	Col	'84
					Superseded (see below)
					An Overview of Amateur Satellite Operation



"I don't need an intercom in the house — I just transmit on 20 metres and they hear me on the television". — VK2COP



"... don't expect you will hear any chirp now . . ." — The Shortwave Magazine

...Continued from previous page

- Micro-Computer Aids to Satellite Tracking VK5AGR (Part 2)
- Using Phase 3 Amateur Satellites VK5HI
- The AMSAT OSCAR Phase 3 Story Dr Karl Meissner DJ4ZC

DATA TRANSMISSION

- Getting Started in Amateur RTTY

- Amateur Packet Radio VK5JMJ
- AMATEUR COMPUTERS VK5AGR

- Demonstration of VK5RTV's Micro-Computer Controller #1

- Understanding Micro-Processors VK5KG

- An ATV Ham-Shack Micro-Computer VK3AHJ

- Getting Started in Amateur Micro-Computers VK5IF

AMATEUR TELEVISION: Technical

- The Signal to Noise Story VK5ATY

- UHF Pre-Amplifiers VK5ATY

- Getting Started in Amateur Television VK5TVT

- Testing Amateur Television Transmitters VK5KG

- High Definition Television Tutorial Don Fink

- ATV Hamfest, York Pennsylvania, 1980

AMATEUR TELEVISION: Activity

- ATV in Australia 1980/81 — Made for British ATC Club

- ATV in United Kingdom 1978/81

- CQ ATV DX International 1983

- ATV in Victoria, 1984

AMATEUR TELEVISION: General Interest

- Low Definition Television Chris Long

- Overseas Television Clips about Amateur Television, etc.

- Model Aero-Nautical Mobile ATV WB2LLB

MISCELLANEOUS

- An Auxiliary Battery Charger VK5NX

- Lecture — Winning Fox-Hunts VK5TVT

- Getting Started in Amateur Construction VK5AIM

- Communication Consequences of Nuclear War

- The Far Eastern Broadcasting Company VK5KG

- The Australian "Over the Horizon Radar"

- What to Expect When the Radio Inspector Calls VK5GO



Education Notes

For those of you interested in figures, here are the statistics for the November examinations. (For those not interested in figures — skip the table but please read the rest of the column).

STATE	AOCP		NAOCP	
	NO SITTING	% PASS	NO SITTING	% PASS
VK1	11	18.2	10	40
VK2	85	50.0	67	50
VK3	102	27.5	84	54.8
VK4	65	27.6	60	51.6
VK5/B	61	24.6	53	30.2
VK6	56	33.9	30	23.3
VKT	13	30.8	9	33.3
TOTAL VK	391	28.4	313	45.3

These figures are, on average, down on the pass rates for AOCP and up on the pass rate for NAOCP as compared with the August examinations.

This time, however, I have been able to have a good look at the papers used. I cannot find any significant differences between the standards of the individual papers used at each level. Admittedly, this is 'feeling' only — no actual statistical analysis has been made, so I find it hard to account for the differences between States. I

think I have said this before.

Comparing the two levels of exam, I have the 'feeling' (again) that the NAOCP exam may have been more difficult than some previous papers in that more questions related to topics most candidates find more difficult to grasp. However, information gathered during our work on the Study Guide suggests that most instructors are giving attention to these topics in a fair degree of depth.

The aspect that concerns me most, is the consistently low pass rate for AOCP/NAOCP. I cannot believe it is due to the exams being set at too high a level, or to the poor quality of the papers. Overall, I could find little fault with the papers. Until we have a fully detailed syllabus at each level, there will inevitably be an occasional question which some consider to be on a 'fringe' area of the course.

Now, for the commercial. I would very much like to have more feedback from those helping candidates to prepare for the exams. I do get some by listening around the bands, but this is not enough. By the time you read this, the February examinations will be not long past. Please, if you have been involved with a class, or even a single

EVOLUTION

What's happened to our QSO's? When we used to chat awhile. Everything's a net now-a-days. You must join or you're out of style.

I've nothing against working DX got myself going too for that game. Nostalgia tells me I started too late. My intestinal fortitude is not the same.

Everything nowadays is hurry up I could be falling far behind. My intuition tells me getting again, Carrying on keeps alert your mind.

Now all the young must do their share, Like we oldster's did years before. If you want stories about the long ago All we oldie's can tell tales galore.

We all have had our hayday days, We're not permitted to go through it again. So we reminisce memories, About our starting away back when.

In radio the coveted honor role I won't have time on either CW or Fone. But day by day just try my best, till The Lord bids it's time to come Home.

Destined to fill an infinitesimal spot But with the rulings of our FCC. The Lord says no earthly possessions, but will I still be old WB6AIC?

— WB6AIC, Newton R Wilmer
— Spark Gap Times, May-June, 1985.

Contributed by Sam Kaufman VK2SK

COMPUTER BUFFS

Please remember, when submitting computer programs for publication in Amateur Radio, to use your blackest ribbon on your print-out. It is preferable to use the print-out directly in AR, as this alleviates errors developing.

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER

56 Baden Powell Drive, Frankston, Vic. 3199

student, drop me a line with your comments on candidate's opinions of the papers and, more importantly, compare the results with your expectations of the candidate's abilities.

If there are suggestions that questions asked have been outside the syllabus, let me know so I can track them down, and so we can assess whether, perhaps, those topics should in fact be included.

I have mentioned previously that our Study Guide for the NAOCP is almost ready. For the Guide for AOCP I would like to have much more input from Divisions and individuals. The revised syllabuses are available in leaflet form from DOC Offices, or from me — so please have a look and let me have your ideas on some of the sections.

Incidentally, the revised syllabuses will be used for the exams in May and thereafter.

I am still trying to maintain an Education Net to collect feedback and ideas. It hardly seems to be worthwhile, but I am sure it has possibilities.

Why not give me your opinion on air instead of paper — Thursday nights, 1130UTC, 3.680MHz +ORM.

Come up and talk to me sometime.

73 Brenda VK3KT.

Club Corner



Pounding Brass at the Peninsula School Amateur Radio Group Club Station, VK3CPS, is Chris Chapman VK3VCC. Looking on are Anthony Hildebrand and Michael Gong.

PENINSULA SCHOOL ARG

The Peninsula School Amateur Radio Group, under the call sign VK3CPS, was set-up during February 1985. Prior to this time, a number of the students at the school in Mount Eliza, Victoria, had taken part in the Remembrance Day Contest and shown an interest in amateur radio.

During 1984, a small group of boys studied for their Novice licence, and Chris Chapman gained the call sign VK3VCC. The latest student to get his licence is Steven Brough VK3PIQ.

Under the guidance of the Science/Maths teacher, Steve Curtis VK3CAK, the Group hope that 1986 will see the start of regular Morse and theory classes.

The school's parent association provided the funds for the purchase of a second-hand FT-101E and projects underway include putting up a new antenna and the construction of a QRP rig.

AR

DEVIL NEWS FROM THE N W BRANCH

The Branch now has a group of people who are going to gather news and arrange broadcast announcements for when the broadcasts are done on the north west coast. A gathering of these people, together with some from the north and south, will shortly meet with the intention of making our news more interesting.

The final designs for a QSL card for the Branch have been handed in by Max VK7KY. The designs will be discussed at an executive meeting to decide on one design and the printing arrangements.

The secretary of the Branch, Tony, has asked members for their total support with Camp Quality. Camp Quality is a group that has a camp for children with cancer and it is planned that the NW Branch will help with communications, etc.

A local equestrian club has forwarded details of an event, to be held in March at Ulverstone, and they have asked for help with communications for the Jumps Events. There were some volunteers so, John VK7ZPT, the WICEN Officer for the Branch suggested it would be a good WICEN exercise.

Andrew VK7ZAP, the Repeater Officer, has asked operators to use their call signs when using or making tests on the repeater. Funds have been allocated for a new system for VK7NW and VK7RAD is complete and ready to go. The only problem is to get the man-power to install it at the repeater site.

The QSL Bureau had 152 cards inwards and 78 outwards for the month.

Greg VK7ZBT, Activities Officer, has many ideas for activities during 1986, some being Talks and Videos.

The Clanger Award was presented to John VK7KDR, as while he was speaking on channel 50 he had to QSY to rescue his torch from his dog. We have heard of feeding dogs a light diet, but torch and batteries?

A fund-raising committee was selected to think of some money-making ideas. Those involved are: VK7ZAP, ZPT and WP.

Greg VK7ZBT, has presented the Branch with a large sign for the members are doing some community work so that it may be known who the group are. The sign is made up of the WIA logo and the North West Branch, Tasmanian Division of the WIA printed boldly on it. This sign has been well received by the members and is considered much needed.

At the close of the meeting, Syd VK7SF showed some videos of his last overseas trip which included scenes of Cardiff.

Contributed by Max Hardstaff VK7KY

THE GLADESVILLE DISTRICT EXPERIMENTAL RADIO CLUB — VK2ADY 1935 — 1955

Ken Andrews VK2ATK
32 Aeolus Avenue, Ryde, NSW. 2112

The Gladesville District Experimental Radio Club (GDERC) came into existence in 1935, largely as a result of the enthusiasm of the Founding Fathers, Charlie Fryar VK2NP and Wal Webster VK2EW. It thrived until the outbreak of World War II, when, in common with all amateur radio activity, it went into forced recess for the duration; members packed up their amateur radio gear in the then ubiquitous *butter box*, and took it to the Radio Inspectors' Store in the then Grace Building, at King and York Streets in Sydney.

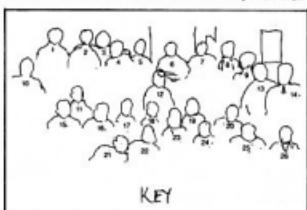
After the war, with many prospective amateurs fresh from radio training in the services, the club recommenced operation under the guiding hands of Charlie and Wal, once again.

By the late 1940s, it could fairly claim to be a force in the local amateur radio scene, with well-



Members in the photograph are: 1 ?; 2 Alan Llewellyn VK2AH; 3 Ken Whitmore VK2AKK; Jim Rudder VK2AJR — now VK2DCF; Lyle Patison VK2ALU; Ray Hancock VK2YM; Dave Andrews VK2AWH; 8 ?; 9 Jack Wilson VK2XX; 10 ?; 11 Merv Smith VK2DD; 12 Max Brown VK2AQB (SK); 13 Ken Andrew VK2ATK; 14 Keith Alcock VK2AOA — now a VK3; 15 Ez Griffith; 16 Allan Tollow VK2AST (SK); 17 Bill Bardini VK2ABZ (SK); 18 Lionel Todd VK2LS (SK); 19 Bill Turnbull VK2QQ; 20 ?; 21 Graham Allen; 22 Wal Webster VK2EW; 23 John Miller VK2ANF (SK); 24 Charlie Fryar VK2NP (SK); 25 ? and 26 ?.

Some members of the club, not included in the photograph — Peter Alexander VK2PA; Bob Beveridge VK2IT — now VK2JZ; Bob Black VK2QZ; Mick Carruthers VK2AQF; Henry Deschamps; Dick Ellis VK2AHR (SK); Norm Franks; Bruce Glassop VK2BG (SK); Norm Hannaford VK2ZB; Horrie Lapthorne VK2HL (SK); Gordon Lee VK2AFL (SK); Arthur Littlejohn VK2AL; Roger Lloyd VK2AMO; Bill Manley VK2MW; Les Reddadcliff VK2AEX; John Rottenbury VK2ANX; Paul Sullivan (SK); Cec Thorthwaite VK2AZO (SK) and John Thorthwaite VK2ATO.



KEY

attended weekly meetings, complete with guest speakers, construction sessions, fox hunts, field days, etc. A 40 metre transmitter and receiver was constructed and housed in the Club Rooms (a converted stable/garage), at the rear of a residence on the corner of Sunnyside Street, and Victoria Road, Gladesville, and operated by club members under the then club call sign of VK2ADY.

"166 mc/s" (sorry MHz) was the immediate post-war "2 metre" allocation, and the club took a special interest in developing this band. Modulated oscillator/super regen was the 'state-of-the-art' technology, and "beautifully home-constructed gear was produced and displayed by such master-craftsmen as Charlie Fryar VK2NP; Horrie Lophorne VK2HL, John Miller VK2AMF; and Allan Tollow VK2AST, and proved at many field days, with portable stations out on high ground, such as Leppington or Kurrajong Heights, striving to work back into Sydney. (This was hot-stuff in those days!).

All gear was, of course, converted disposals or home-brew. It also used valves (remember the 954 acorn series, and 7193s and RK34s with both plate and grid caps?) which made for power-hungry gear. Portable petrol driven alternators were about 30 years down-the-track, so the gear was generally powered by ex-disposals generators driven by the biggest accumulators one could scrounge.

The club also took a keen interest in 40 metre Fox Hunts, and weird and wonderful were the portable creations of those days.

The accompanying photograph shows members present at a meeting in 1949, but listed separately are many others who were either then, or at other times, also members of the club.

Sadly, as the younger members married, built homes, raised families, or moved away, the club went into a decline, and finally went into permanent recess in the mid-1950s.

The list of members contains names and call signs which, I am sure, will awaken memories in our older brethren. While a number are now Silent Keys, some have moved away, including interstate; others allowed their call signs to lapse, and with later re-awakened interest, had to take out new call signs.

Many, however, are still active on the New South Wales scene, one of the most notable being Wal Webster VK2EW, one of the original founders of the club, and now aged 74.



Wal Webster VK2EW.

Wal was a former PMG telegraphist, and while he does use phone, has a particular interest in CW, using his trusty Vibroplex, a carry-over from his professional days, and in AMTOR and RTTY using a Commodore 64 and a converted television for a monitor.

I guess there are always exciting developments going on in amateur radio, but it was especially good to belong to the GDERC in those immediate post-WWII days!

Since the club ceased operation in the mid-1950s, a new club formed in the district during the mid-1970s, known as the Gladesville Amateur Radio Club. This small group conducts several local repeaters, amateur television transmissions and a series of classes on many amateur radio subjects.

Hopefully this new group will be able to write-up their history for inclusion in a future issue of Amateur Radio.

AR

INAUGURAL MEETING



This photograph depicts some of the faces seen at the inaugural meeting of the South-West Zone of the WIA NSW Division, which was held on 5th July 1953.

At the meeting, the chairman was the late Jim Corbin VK2YC, the then President of the VK2 Division. Members came from Wagga, Tumut, Griffith, Albury, Narrandera, and Coolamon.

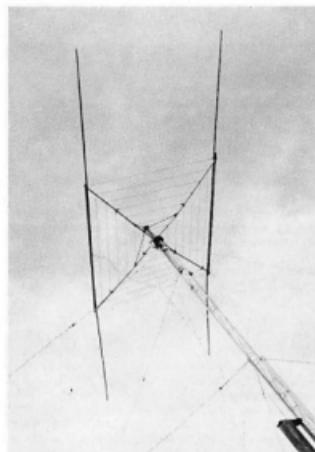
From this initial meeting evolved the Annual South-West Zone Convention, which was first held at Lake Albert, Wagga Wagga, in October 1953.

REAR (l to r): Unknown; Don Haberect VK2RS; Unknown; Lyn Furner VK2AOE/2ANI; Stan Mitchell VK2AID (SK); Unknown; Brian Jones; Ted Bratt VK2AXD.

FRONT (l to r): Ross Weeden VK2PN; Arthur Phipps VK2EU (SK); Geoff Page VK2BO; Jim Edge VK2AJC; Bruce Fleck; Jim Corbin VK2YC (SK); Stuart Savage VK2PL/2BHP.

The photograph was taken by Alf Moye VK2BW (SK) and contributed to Amateur Radio by Jim Edge VK2AOJ.

CLOTHESLINE AERIAL



The accompanying photograph is a mini-20 metre, two element Yagi, referred to by the owner as the "Clothesline Antenna". The frame-work is actually a salvaged 'rotary clothes hoist' on a manual rotating tower, and it works extremely well — just listen for Ron VK3MB, from Harkaway, Victoria, for the proof.

SMALL PORTABLE SATELLITE TERMINAL

A portable satellite terminal which can transmit and receive written text just about anywhere in the world has been designed to fit into a single briefcase.

Existing terminals needed to be packed into two large suitcases.

The designer, 30 year old Norwegian, Hans Christian Haugli said it would work anywhere provided there was an unimpeded view to a satellite. Either in the open or through a window.

Haugli developed the system with a team of fellow engineers at the London headquarters of the International Maritime Satellite Organisation, INMARSAT. It will cost about \$7 380 in its present form.

The system consists of a box the size of a large detergent pack with an omni-directional antenna bulging out of a plastic bubble at one end. It connects to a small battery pack and a mini computer keyboard with a weight including batteries of 11.5kg.



VK2 Mini-Bulletin

Tim Mills VK2ZTM

VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW 2100

SPECIAL NOTICE

ATTENTION - VK2 DIVISION MEMBERS

The 1985-86 Annual General Meeting of the New South Wales Division will be held in the Auditorium of the Granville RSL, at 2pm on Saturday, 5th April 1986.

Nominations for the Council and Agenda Items for inclusion in the business paper must be received by 2pm on Wednesday, 5th March 1986, at the registered office of the Division — 1st Floor, 109 Wigram Street, Parramatta. (By post to PO Box 1066, Parramatta, NSW 2100). Nomination forms are available from the Office.

A separate posting of the Annual Report and Financial Statement, together with any other matter for the AGM will be sent to members during this month, March 1986.

Signed: Jeff Pages
Secretary

I had planned to make this issue another VK2 Special. However, as the deadline approached I was still awaiting some of the promised material.

One item which did arrive was an historical look at the old Gladysville District Experimental Radio Club, written by Ken VK2ATK, an early member of that club.

It would be nice to cover each club, past and present, in a small article, so club secretaries be on the lookout for a letter from me in the near future. The subject has been brought to the clubs before in the affiliated club posting, but this method of inquiry rarely produces a reply. Another item we would like for display at the Parramatta Office from those who have them, is a sample copy of any awards your club or group may produce.

GROUP CLASSES

This is the time of the year when many groups start their various classes. Many inquiries are received about classes, both in the city and the country. Has your club upgraded the records in the office about classes and who to contact about them, as well as general club matters? Call (02) 689 2417 or write to the office to update the reference material—please!

JOINING FEE DELETED

At the January Council meeting, it was decided to abolish the joining fee from the Division membership fees, to be effective from 1st January 1986. The fee for this year, which has remained unchanged for several years, is — Full Member \$31.50 and Associate Member \$29.50.

FEED-BACK REQUIRED

As previously mentioned, a 23cm beacon has been installed at Dural on 1296.420MHz. The next band to be established will be 10GHz. Some feed-back is required as to which portion of the band is most suitable for a beacon signal. If you can help, please contact the Beacon Officer, John VK2EGI, via the Divisional Office.

COME-ALONG FOR A FUN TIME

A reminder that a barbecue is held at VK2WI, Dural, on the first Sunday of the month, following the Sunday Morning Broadcast. Bring your own food, we provide the fire.

Come-along on 2nd March; 6th April; 4th May and 1st June.

THE END OF A YEAR

This month is recognised by the VK2 Division as the conclusion of the 75th Anniversary Celebrations.

This will be marked by the Seminar, to be held on Saturday, 8th March, at Amateur Radio House, 109 Wigram Street, Parramatta, with a 10am starting time. Included in the program will be the closing of the Time Capsule. Bring your QSL card along for inclusion. If you cannot attend, post a QSL in to the Office so that it arrives prior to Friday, 7th March.

The winners of the Home-brew Contest will be announced during the day.

COMING EVENTS

Easter — The Urunga Weekend

Saturday, 5th April — AGM (See notice)

Saturday/Sunday, 19th/20th April — Conference of Clubs, which will be hosted by the Orange Amateur Radio Club at Amateur Radio House.

ARE YOU VHF DX INCLINED?

Those who like maps, particularly to locate some high ground to work that DX path, often turn to the survey maps for guidance. Have you seen the series of three dimensional ones in the various map shops?

The Australian series are distributed by Geo-Maps Company of Sydney, and include, in the range, one on Sydney and surrounding districts; the Snowy Mountains; Canberra; New South Wales; Tasmania and several sizes of Australia.

They are well worth looking at and they do make an ideal present from the family when you (or they) cannot think of a (useful) thing for you, the amateur.

WICEN NOTES

The annual co-ordinators conference will be held on Sunday, 2nd March, in Sydney. WICEN subscriptions for 1986 will be \$5.00 and the WICEN Net is held on VK2RWS 7150 and 80 metres, 3.600MHz, at 8.30pm on Thursdays.

URUNGA-AT-ATCHISON

The annual Field Day-Convention weekend will be held over the Easter period at the New South Wales mid-north coast town of Urunga.

Many of the events this year have been designed without the need to use your car.

A program and other details may be obtained from the organiser — Max Francis VK2BMK, 23 William Street, Bellinger, NSW, 2454.

Further details will be given on the Divisional Broadcasts, 11am and 7.30pm, Sundays.

THE CHANGING FACE OF ATCHISON STREET

It is approaching four years since the move to Parramatta. Number 14 has been demolished and in its place is a three story office block which is occupied by the Friends Provident Life Office (NSW Branch).



Next door, on the railway station side, the adjoining four properties have also been replaced by a low-rise office building. Further up the street, the last old property is currently being demolished.

In the block behind Atchison Street, more than one-third is currently being re-developed.

The Division occupied Number 14 from 1960 to 1982. It was known as the Wireless Institute Centre, or WIC.

One of the reasons advanced by those promoting the move from Atchison Street was to obtain a location which was close to the geographical centre of Sydney, hence equally accessible to all. If you are yet to visit Amateur Radio House, or have not been for a while, why not come out to the Seminar on 8th March?



WA Bulletin

NOTICE OF AGM

Notice is hereby given that the AGM of the West Australian Division of the Wireless Institute of Australia will be held on Tuesday, 22nd April 1986, at the Institute of Engineers, 712 Murray Street, West Perth, at the conclusion of the General Meeting.

Business to be transacted will be:

Consideration of Council's Annual Report
Election of Office Bearers, vis: President;
Vice-President and seven other councillors

Election of two auditors
Appointment of a patron
General business which has been duly notified

Agenda items will be advised on the Divisional News Broadcast on the three Sundays prior to the AGM.

Members unable to attend may appoint a proxy in writing in the following form:

I, being a member of the Institute hereby appoint also a member of the Institute to act for me as my proxy and in my name to do all things which I myself being present could do at the AGM of the Division to be held at the Institute of Engineers, West Perth on Tuesday, 22nd April 1986.

Signature.....

Witness.....

Date.....

Nominations for council must be tendered in writing to the Secretary, signed by two members and the nominated member's acceptance 42 days prior to the AGM.

General Business Agenda Items must be tendered in writing to the Secretary, signed by three members, 42 days prior to the AGM.

Fred Parsonage
Honorary Secretary

AH

SOUTH PACIFIC TELEVISION SERVICE CONSIDERED

The Australian Broadcasting Corporation has been asked by the Department of Communications to look at the feasibility of a television service to cover the south Pacific area.

Such a service, using AUSSTAT, would cost about \$25 million a year and reach 5.5 million people in Papua New Guinea, Fiji, Kiribati, Tuvalu, New Caledonia, West Samoa, the Cook Islands, Tonga, Vanuatu and the Solomon Islands.

Five-Eighth Wave



Jennifer Warrington VK5ANW

59 Albert Street, Clarence Gardens, SA. 5039

Merv Miller VK5MX

Maintainer of VK5WI 10
metre Beacon/160 metre
Relay.
Broadcast Producer.

Peter Barlow

VKSNPC

Chris Whitehorn

VKS5PN

Henry Andersson

VK8HA

Marlene Austin

VKS5OO

Joy Charles VK5YJ

Graham Horlin-Smith

VKS5AQZ

Bob Allen VK5BJA

J 15 and other PR
Functions Technical
Adviser.

Jack Coulter VK5JK

Jack Wright VK5FV

Jill Wardrop

Ray Dobson VK5DI

David Clegg VK5AMK

Don McDonald

VKSADD

John Gardiner

VK5PJJG

Ken Westerman

VKSAGW

Jenny Warrington

VKS5NW

Secretary/Vice President/

Columnist.

FATHER AND SON BECOME INVOLVED IN AMATEUR RADIO

Ken McLachlan VK3AH

PO Box 39, Mooroolbark, Vic. 3138

Whilst listening to an interview with Jim VK3PC, on a Melbourne broadcast station regarding the hobby for all, amateur radio, a member of the Rotary Club of a suburban area was convinced it would be the subject of an informative speech at one of their meetings.

Jim was approached and agreed to giving a luncheon talk on the hobby which duly took place in mid-1984. At the meeting was Joseph Chan, a local Dental Surgeon.

Joseph became interested and after discussions with his son Joseph (Junior) decided to attend the WIA Courses which commenced in September of that year. In the DOC November examinations both passed the CW and Regulations, Joseph (Junior) was in Year 4 of Primary School at the time, and had just turned 10 years old the month before. No mean effort!

1985 was a year of success. Joseph (Senior) passed the Novice Theory at the February examinations, continued on and passed the LAOCP in the May sittings, finally conquering the CW in November which gave him the call VK3CBO. Joseph (Junior) passed his theory and obtained his Novice licence in the November sittings.

Both amateurs are interested in electronics and computing, having built their dual disc drive computer from a kit. Joseph, with the call sign VK3PIO to his credit, is now in Year 6 at Primary School, having sat for the AOCOP last month and is awaiting the results. All readers wish you luck Joseph in your future studies, the results of the AOCOP examinations and your ambition of becoming involved in the electronic technological field after you complete your studies.

Both the amateur enthusiasts are ably supported in their endeavours by the wife and mother of the family, Sandra who describes her husband as 'Mr Fix-It', as he is always tinkering with cars, carpentry or being called upon by friends to fix some of their problems. The other members of this happy family, Francie and Sophie have not yet acquired a taste for the hobby we all enjoy but who knows, within half a decade there might be a five member amateur radio household.



Forward Bias

Ken Ray VK1KEN

Box 710, Woden, ACT. 2606

ELECTROSTATIC ZAP

Static electricity is usually more of a nuisance than a hazard — however hazardous situations can occur. For example, in rising from a vinyl-covered chair when wearing insulated footwear, a person could easily develop a potential of up to 7000 volts.

In defence establishments and production factories electrostatic energy is of concern because it can be well in excess of the minimum ignition threshold of many detonators, combustible gases and solvents.

Even lower electrostatic energies can be a problem with computer equipment where data can be corrupted and microcircuits damaged if discharge occurs to some metallic part of the computer.

There were also hazards involved in mail sorting, filling hydrogen weather balloons and in the use of combustible anaesthetic gases in hospitals.

Problems with electrostatic charging can be overcome by taking actions including keeping the relative humidity above 40 percent, and using materials which will dissipate a charge such as wood and metal.

Condensed from "Electrostatics" leaflet produced by the Materials Research Laboratories Physics Division, Electronics Group.

One of the most pleasant ideas to emerge during the WIA's 75th year, which, let's face it, was full of many pleasant things, was the striking of medallions which were to be given to those people who had given special service to the WIA in 1985.

In this Division, we send Christmas cards to the 60, or so, volunteers who give their time and energy each year in some way or another, to the WIA. They may be a Divisional Officer, a member of the Morse Practice Panel, or one of the many Sunday Morning Relay Stations, or, perhaps, they just help at meetings, or cater at Christmas socials and conventions. Whatever they do, their only reward is their own satisfaction and the Council's thanks in the form of a Christmas card. With the Christmas cards everyone (hopefully!) receives one if they have done something for the Division during the year. With the medallions it was different. Each Divisional President, Federal Councillor and Federal Officer was sent one from the Federal Executive. We were then told that the Divisional Council could nominate "about 20" deserving members of our Divisions.

What a headache! Whom to choose and who to leave out? After much "soul-searching" and even some heated discussion, the following members were decided upon.

Sam Nicholls VK5TZ Broadcast Roster Officer/
Two metre Relay Operator.

Lindsay Collins VK5GZ Building Supervisor/
Intruder Watch Co-ordinator.

John Butler VK5NX Journal Technical Editor/
Collation/Transmitter Editor.

Bill Wardrop VK5AWM Journal Editor/WICEN
Supervisor (now Director). Morse Practice Group Co-ordinator/80 metre Relay Operator.

John Mitchell VK5JM WICEN Director/
Auctioneer at Buy and Sell Nights.

AR



MARCH GENERAL MEETING

The March General Meeting will be held on Monday, 24th March, beginning at 8.00pm, with doors open at 7.30, in the Griffin Centre, Civic. The topic will be batteries, and their use in amateur radio. The Book-Stall and QSL Bureau will be available, as usual.

MEMBERSHIP FEES

A quick update on the VK1 membership fees. The range of fees for VK1 members are:

Full Associate	\$34.00
Family	\$22.00
Student	\$22.00
Pensioner	\$24.50

NOTE: It is necessary to produce a Pensioner Health Benefits Card for Pensioner concession.

VK1 AWARD RECIPIENTS

Phil VK1PJ, the VK1 Awards Manager, advises the following awards have been issued since the last publication. VK2CZX and ZL1AOQ received Gold Upgrades; VK1BAT received a Silver Upgrade; and JA4JBZ and L70227 received the Basic Award.

Congratulations to all those listed for their achievement.

JOHN MOYLE FIELD DAY

As previously mentioned in these columns, the

VK1 Division will be running a station in the John Moyle Memorial Field Day Contest. The details are as follows:

Date — 15 and 16th March; Call Sign — VK1WI; Location — Bulli Head in the Brindabella Ranges; Frequencies will be 160 metres through to 23cm.

The site to be used is west of Canberra, at Bulli Head, in the mountains. The site is at an elevation of 1386 metres and is an excellent VHF/UHF location with AGM grid co-ordinates of 35 degrees 23 minutes 13.763 seconds south; 148 degrees 48 minutes 44.186 seconds east — it is at Zone 55, Easting 664600, Northing 6082500. We will be monitoring the usual call-channels of 52100, 144.100, etc, as well as keeping a watch on the beacons.

To all other divisions and clubs, the VK1 Division throws out this challenge — the club which contacts VK1WI on the most number of bands (which must include at least one VHF or UHF channel) will be deemed the VK1 Favoured Club in 1986. In the event of a tie, the club whose Field Day station was the furthest from the VK1WI site will be the winner. The inaugural winner of this most coveted award will receive a handsome certificate attesting this fact, and publication attesting this fact in this column as soon as possible after the contest. I hope to hear and work as many of you as possible on the weekend.

AR



Over to You!

TEN METRE FM REPEATER GROUP

A group of Melbourne amateurs have shown interest in establishing a repeater for 10 metres FM. This type of repeater would be the first in the Southern Hemisphere and would have national, and international coverage.

Any amateurs interested in the repeater can contact David VK3UR on (03) 232 5414, or write to Box 32, Clifton Hill, Vic. 3068.

Amateurs can also call in on the 10 metre FM net any Thursday at 0900UTC, on 29.600MHz.

Yours faithfully,

Ian Sinclair VK3DSI,
58 Chute Street,
Mordialloc, Vic. 3195.
AR

THANKS TO EDUCATION

During 1985, I passed the Novice and Full Call examinations and just wish to pass on my appreciation of the assistance given by the WIA. Especially to Brenda VK3KT, the Federal Education Officer of the WIA for her promptness re test tapes, test papers, etc and also her encouragement. A lot of thanks for the NSW CW Sessions, which were great, and I will still make use of them in the future to keep my hand in.

Cheers.

Garnet Freer VK2CGF,
17 Old Bar Road,
Old Bar, NSW. 2430.
AR

CONGRATULATIONS FOR WIA 75 AWARD

May I congratulate those responsible for the creation and dispatching of the WIA 75 Award?

I made many enjoyable QSOs that would not have otherwise eventuated.

On many occasions those who did not need numbers were only too happy to volunteer them.

Despite those who would tell us otherwise, the spirit of amateur radio is very much alive and well, and I feel the WIA 75 Award has ensured that this spirit endures.

I look forward to my next 25 years in amateur radio, when I hope I will have pleasure in gaining the WIA 100 Award.

73.

Con Carlyon VK4BID,
18 Ebbacher Street,
Toowoomba, QLD. 4350.
AR

TERMINOLOGICAL ERROR

In reference to Amateur Radio, January 1986, Page 37. Galileo was primarily known as an astronomer and not an astrologer. There is a difference between the two titles.

Keep up the good work. Look forward to future ARs.

Eddie Calleja VK3EE,
26 Donald Street,
Morwell, Vic. 3840.

NOTE: Apologies for the error. However, in Galileo's time the distinction may not have existed. Ed.

AR

THE AMATEUR RADIO MOVEMENT

Your editorial comment in AR, January 1986, is most offensive towards the Amateur Radio Movement!

The association to which all radio amateurs belong, is the International Amateur Radio Movement. A legitimate amateur radio licence is the only cost of membership.

The main aims and spirit of the Amateur Radio Movement are:

1 Freedom of choice (within the licence conditions).

2 Allegiance only to the non-aligned, licensing authority.

3 No discrimination between amateurs.

The comments in your editorial, and the latest Call Book in regard to WIA membership and the use of open facilities are blatant examples of the world-wide trend by organisations like the WIA to promote discrimination within the ranks of the Amateur Radio Movement, in order that these organisations may gain finance and power with which to destroy the original concepts of the Amateur Radio Movement.

Organisations like the WIA, NZART, RSGB, ARRL etc, should understand that they are sub-servient to the Amateur Radio Movement. These organisations exist only to assist the Amateur Radio Movement. They are not there to encourage division or discrimination by the use of moral pressure.

If a private organisation, like the WIA, decides to provide open facilities, they are doing so with their eyes open. They should not expect, or pressure, non-members to support their projects.

Members to the Amateur Radio Movement should in no way feel obliged to be a member of any organisation. The Amateur Radio Movement is premier: The only prerequisite is a legitimate amateur radio licence.

Tony Tregale VK3QO,
38 Wattie Drive,
Wattsonia, Vic. 3087.

NOTE: Since Tony's criticism is aimed at the January editorial, a reply to this letter is made in this issue's Editorial Comment. Ed.

To Honour Hermit Hurtle.

We'll miss perhaps his ugly dial
His raucous voice and drawing style
We'll miss him for a little while
Forget that Hermit Hurtle.

Perhaps somewhere someone will wait
In Europe, Asia or Kuwait
Listening in to hear their mate
Absent Hurtle Watson.

I'd like to think some tears might fall
For Hurtle's ilk no hopers all
Who answer that last trumpet call
Unmourned like Hermit Hurtle.

THE OLDEST

I note that VK3KC states that the Victorian Railways Institute Wireless Club is Australia's oldest radio club, see AR January 1986, page 14.

I would like to correct that impression. As patron of the Waverley Amateur Radio Club, I have a copy of the complete DOC file on the licence, VK2BV, ex-A2BV, ex-N249, which states the first licence was issued to the Waverley Club on 18th August 1920. This was pre-dated by the formation of the Club in March 1919.

This has been confirmed by the original sponsor of the licence, Gordon Thomson VK2AVT, who holds AOCP licence number three. The Waverley Club has been continuously licenced for over 65 years, and is the oldest non-WIA radio club in Australia.

Duane Foster VK2VE,
Box 426,
Randwick, NSW. 2031.

Thanks for bringing this to our attention, Duane. (See page 64, AR November 1985 for a brief history of the Waverley Club). Ed.

HERMIT HURTE

As many amateurs know, my husband VK5HW passed away on the 13th December, after a long illness.

Whilst going through some things in his shack I came across a sort of poem which I, and some of his friends believe he wrote himself. I think that through years of frustration of not being able to do as much as he would have liked and having to give up smoking because of his illness, urged him to put some thoughts onto paper.

Yours sincerely,

Jean Watson,
85 Glyde Street,
Albert Park, SA. 5014.

HURTE THE HERMIT

*Old Hurtle Watson's cashed his chips
No more he'll go on hypnotic trips
And no more smoke will pass the lips
Of Hermit Hurtle Watson.*

*Tobacco killed him or so he'd say
The lack of it, but anyway
The sands of time have slipped away
For Hermit Hurtle Watson.*

*In his shack on his own
He really never was alone
For there was a microphone
In the shack of Hermit Hurtle.*

*'Til the day he cashed his chips
The world was at his fingertips
While words drawled slowly from the lips
Of Hermit Hurtle Watson.*

*Hermit the Hermit will no more sip
The brew of tea he called Sheep Dip
Nevermore he'll crank the pot
Or stoke the fire to keep it hot
No wonder that the boots did rot
Of that old Hurtle Hermit Clot.*

*No relatives with reddened eyes
Will weep at Hurtle's sad demise
No lowered flag at half-mast flies*

THANKS FROM THE WAR MEMORIAL

In 1984, the Wireless Institute of Australia launched a nation-wide appeal on behalf of the Australian War Memorial, for military wireless equipment.

The response was overwhelming, and I would like to thank everyone responsible for this success.

One of the items received as a result of the appeal was an AR8Q receiver. The AR8Q receivers were built by AWA during the second world war and were used extensively by the RAAF, the RAN, and the Australian Army.

Our receiver is in exceptionally good condition and it appears it could be made serviceable, given the appropriate power supply unit. I would be grateful therefore if any readers can assist us in this regard.

Thank you once again for the generous co-operation from members.

Yours faithfully,

Mark Clayton,
Curator, Aircraft & Technology for Director,
Australian War Memorial,
Canberra, ACT. 2601.
AR

COPIES OF FOOD RECIPES!

I would like to draw attention to an advertisement in the For Sale-NSW Column, page 64 of Amateur Radio January 1986, which advertises the VK Amateur Radio Cook Book.

Myself and another amateur had spotted the advertisement and, as we are both keen home-brewers, and the fact that the advertisement appears in the illustrious WIA Journal, we sent for a couple of copies of this so-called amateur Cook Book. Imagine our disgust and anger when we received copies of food recipes.

I do not wish to see the WIA or its Journal become de-graded and most of all, I do not want

see WIA members cheated or discouraged from home-brewing. I love my hobby and will do my very best to protect it from those who would drag it into the mire.

What hurts more than anything is that an amateur radio operator (for his or her call sign appears in the advertisement and the WIA Call Book) would stoop to such low tactics. I just hope that the WIA and its Journal will do its best to warn members of what to expect from the above-mentioned advertisement, before they find they have no members left to warn.

Yours sincerely,

Glyn Gibbons-Johns VK2DJV,
144 Maitland Street,
Bingara, NSW, 2404.
AR

DISCUSSION PAPER

I was pleased to see the discussion paper by Jim Linton and Roger Harrison proposing a Digital Class of amateur licence.

If our hobby is to survive, we need the youth of today to be a part of it. With digital techniques such an important part of today's world and every person exposed to the micro-computer, I believe that their quest for knowledge could be enhanced by an involvement in amateur radio.

The secondary school science course of today gives a good basic understanding of electronic and digital principles and some exposure to amateur radio may be seen as an extension of their technical progression.

A digital licence may sound revolutionary, but so did AM and SSB modulation, FM repeaters, satellite communications, RTTY, etc when they were first introduced on the bands. Let's face it, if it was not for SSB, electronic Morse and RTTY, most of us would not even be on the air today.

The doomsday people said the Novice Licence would lead to the worst aspects of CB radio becoming evident on the bands, but instead, most novices are up-grading. Thanks to the Novice Licensees, 10 and 15 metres have seen more activity than in the previous fifty years. As for the reducing of operating standards, I have noticed very little change in the last 25 years.

Amateur radio, which has traditionally been the forefront of new technology, is being left to founder as the rest of the world moves into the 21st century. Let us support the proposed licensing update and move amateur radio into the 21st century where it may have some appeal to the youth of today.

Yours faithfully,

Peter O'Keeffe VK3YF
PO Box 654,
Shepparton, Vic. 3630.
AR

HAVE YOU OLD PARTS?

This letter is a request for help in a little project I wish to undertake. I want to build, for my own pleasure, a crystal set. This is easily done these days, the kits are available off the shelf in many places. However, I want to build mine as a home-builder would have done in the days when the "Cat's Whisker" was the way to a new and wonderful form of entertainment. I want to utilise components that might have been available then.

Since this magazine has been around for many years, I hope to tap the expertise and advice and maybe even parts, from some of the "Old Time Members".

I look forward to any response.

Yours faithfully,

Dave Nicholls,
15 Dart Street,
Boulder, WA. 6432.
AR

JOHN CITIZEN IS ALIVE AND WELL

I note from page 23 of January AR, John Citizen has joined the ranks of amateur radio.

With apologies to both John Clarke and his alter ego Fred Dagg, I had expected to hear nothing further of John Citizen since he had his personal affairs revealed to the nation in the Form S Taxation Guide.

We now find John is again in the public eye. As exclusively reported in AR, John Citizen has smashed through all previous known technological barriers to exert his obvious

expertise by passing the DOC examinations on 1/4/99, some 12 years hence.

The fact this lad is right up there with the best of them is clearly demonstrated by his passing the NAOCP and LAOCP examinations on the one day. We may quickly gloss over the fact John is 228 years of age at the time.

What I found especially fascinating is John presents himself at DOC examinations flashing blue eyes and sporting pink hair. What is behind this devil-may-care attitude?

It had no effect on the minister's delegate, a Mr Fred Bassett of DOC.

Also, we can note the fact that his stature diminished from 180cm down to 110cm between examinations. This is a bit worrying.

Could it be that his secret process for transferring 228 year olds into the future began to work off?

Could it indicate an inherent risk for any 228 year old sporting pink hair, who flashes blue eyes at DOC examiners twice in one day, 12 years into the future, will be reduced to instant dwarfdom?

My father VK2ARP has always warned of the dangers of "fiddling about" with radio. Never has this been more evident.

73,

Ian Purdie
19 Hollis Street,
Wentworthville, NSW. 2145.
AR

AMATEUR RADIO — FUTURE?

Amateur radio evolved from the AOCP only, to include, in 1959, the limited licence and, in 1977, the novice licence. Each has attracted new people who have maintained the traditions of our hobby. Today our growth rate has slowed again to zero. As before, we ask, "What can be done?" Today only one percent of amateurs are under 20 years of age. If we leave things as they are how many amateurs will we have in the future?

It is easy for us to do nothing — after all, we are licenced and how many of us will be alive in five, 10 or even 15 years, anyway? How many of us objected to the recent DOC increase to a \$30 examination fee? There is no age limit, but who cares if today's 11 year old has to pay \$30 to sit, or more, to re-sit for a hobby licence which traditionally cost \$2. US amateur examination fees, by law, cannot exceed a little over \$4.

Australia copied and modified the successful ideas of other countries when it introduced the limited and novice licences. Copying ensued that, as in other countries, those licences would attract the right kind of enthusiasts.

Today you cannot take a Novice from a Limited, from a Full licence; we are all radio amateurs.

I am interested in the Discussion Paper, written by Jim VK3PC and Roger VK2ZTB, which was printed in February's Amateur Radio. It suggests a VHF/UHF only beginner's licence, based on the Japanese novice voice licence. The Japanese have successfully attracted large numbers of teenage youngsters to the hobby. All operators in Australia agree, as we hear daily on 21MHz, that these newcomers are as polite and amateur spirited as any in the world. With an examination level equal to the Japanese novice we should be able to copy their successful formula and attract large numbers of youth and still maintain the same unmistakable amateur spirit.

The enhanced, or updated novice idea is similar to that proposed by the ARRL. In the USA, a multiple-choice question paper, consisting of 20 questions, is constructed and administered by an unrelated and non-commercially involved amateur. Such exams can be taken by any newcomer, at any time. This has worked so well that the ARRL has asked FCC to enhance the US novice, which is presently CW-only, to include voice and data modes such as RTTY, Packet, etc to further attract newcomers, particularly the thousands of bright computer kids out there. The novice was great in attracting the CB-radio buffs, now the technical kids are into computers. An updated novice licence will have the relevance needed to attract these kids.

It is clear that both the Japanese and American novice levels, though easier to obtain, are in no way detrimental to the hobby. If adopted, they could boost our numbers and make it easier to

attract even more newcomers.

Scrap the present exam system conducted by DOC and replace it with the successful US or Japanese one.

For example:

VHF/UHF only Beginners Licence (Equivalent to the Japanese Novice Voice Licence). The examination method and level would be identical to that in Japan; it is conducted by endorsed volunteer examiners or in schools following an amateur radio course.

Enhanced Novice Licence. This examination would be conducted as is the US Novice test; is by any qualified amateur licensee above the novice level with safeguards as in current US regulations.

Additionally, several long-standing items enhancing our service should be included in overall discussion with DOC.

They could be:

Repeater Linking — this is within amateur bands and should be an amateur affair. For DOC to take years to cross and do every experiment and development within our hobby should not be necessary.

ACOP Power Level — USA novice licensees are newcomers lower in examination level than our own novices, yet are permitted 200 watts CW output. This is more than the 120 watts CW maximum for our top class ACOP licensees. In May 1985, Israeli top amateur licensees power was raised to 1500 watts PEP output. US amateurs achieved this same power increase even earlier.

Remote Control Linking — any US amateur can remote-control his HF station via UHF links and in this way can talk world-wide from his handheld, or car. The requirements to file details on such amateur radio remote control links, including the safeguards, are part of US regulations and should be easily adopted here.

Packet Radio Digipeating and Unattended Operation in General by Individual Amateurs — we should consider adopting US amateur radio regulations straight out for the same reasons we adopted the US Third Party Traffic Regulations in total. Using the VI call sign over the last few months of 1985 was great, and with the above suggestions it should ensure that there will be plenty of interesting things to talk about in 1986.

Sam Voron VK2BVS,
2 Griffith Avenue,
Roseville, NSW. 2069.
AR

CONGRATULATIONS

May I congratulate the Editor of Amateur Radio on his powerful and timely Editorial in January's AR.

Dave Richards VK4UG,
12A Savannah Street,
Redcliffe, Qld. 4020.



QSP

EVERYBODY HAS HEARD OF EMI, BUT WHO HAS HEARD OF SMI?

The following item appeared in the September 1985 issue of the South African Shortwave Listener, and later in the November 1985 issue of DX Post.

A new problem has shown up on the amateur bands. It is SMI. During a QSO Don Grant K9JL was having with Glen Turner NF7T, in Seattle, Washington, he received a call to the phone. His neighbour, knowing for at least thinking she was alone in her home, as her husband was working out of town heard a man's voice coming out of her Electronic Sewing Machine.

Glen said the lady said it was a little scary until she figured out whose voice it was. Glen was coming in loud and clear, she said, but not to worry. With his beam pointing right over her house to talk to southern California, she had a treat to listen to a QSO while she did her sewing! How nice some neighbours can be!

Silent Keys

It is with deep regret we record the passing of —

MR MALCOLM BROWN	VK2AQB
28th December 1985	
MR FRANK CARROLL	L30338
REV H ELLSON	VK3DRO
19th December 1985	
MR JOHN HAY	VK2DTF
1st November 1985	
MR E W JINKS	VK2ADJ
MR R J MARRIOTT	VK3SI
12th November 1985	
MR P A MCARTHUR	VK2DCS
20th August 1985	
MR J P ROSEWARNE	VK5MN
27th July 1985	
MR E M SIMPSON	VK2ES
21st June 1985	
MR GEORGE TURNER	VK3GN
MR I M UPSON	VK7NMU

Obituaries

TOM MANKS VK3TZ
It is sad to report the passing of Tom on 29th December 1985. Tom was the victim of a fatal heart attack.

Tom was first licenced in 1935, and had just completed 50 years as a radio amateur. During his early days in radio he operated on 80 and 40 metres, but recently had moved on to 20 metres. After licences were re-issued in 1946, he also operated on the temporary 166MHz band.

He was a Pharmaceutical Chemist by profession, but had recently retired.

To his wife Grace, sons Gordon, David, and Robert and their families we extend our deepest sympathy.

Ron Bell VK3MB AR

EDWIN WILLIAM JINKS VK2ADJ
It is with deep regret I advise the passing of Eddie Jinks VK2ADJ, ex 2HX. Eddie was born in Broken Hill and gained his amateur licence in the early 1930s. He was one of the "Old Timers" who used to broadcast music for the locals when it was permissible to do so.

Eddie was last employed as a Communications Officer with the Department of Civil Aviation, and spent many years with that service in the north of South Australia. During the war he served as a War Correspondent with the ABC.

He was a member of the Broken Hill Blind Association.

Eddie was still interested in radio and was a White Stick operator until a few months before his passing.

He leaves a widow, Phil and four sons to whom we extend our deepest sympathy.

Charles Dennis VK2AZL AR

HORRACE OAKES VK2FA
It is with deep regret that I advise of the passing of Horrace Oakes VK2FA on the 5th January, 1986 at Wyong Hospital after a short illness.

Horrace was just one week short of his 87th birthday.

He was born at Bolton, Lancashire, England on 12th January, 1900. He served an electrical apprenticeship in England and came to Sydney to reside in 1916. He started a radio business in High Street, St Kilda, Victoria (about 1940) and still later in 1944

he opened a radio business in Oxford Street, Woolloomooloo, having an agency for Swan and Hallicrafters Amateur Radio Equipment. The shop was a "mecca" for many radio amateurs. He was first licenced in 1952 as VK2FA.

Horrace served for a time on the NSW Division, TVI Committee and was also keen on antenna design. Retiring in 1971 he moved to Beresford Vale on the central coast and soon had an excellent antenna system on HF VHF and UHF.

Horrace had many friends world-wide and I consider myself fortunate to be among them.

We had a daily sched on 7MHz and 21MHz and latterly on UHF for over 19 years. He will be greatly missed by all his friends and listeners.

Gordon Thomson VK2AVT AR

GEORGE TURNER VK3GN
It is sad to report the sudden passing of George on 16th October 1985, whilst he was visiting Swan Hill.

George who was in his 72nd year, became interested in radio, as he said, one magic day in 1924 at Myrtleford, through his brother Charles VK3AOI, listening to amateur stations on a one valve set.

In 1927, he became an Assistant Projectionist, embracing the surrounding country areas. Eventually, he joined his parents in Maryborough and was attached to the Paramount Theatre. He attended the technical school for his Projectionist Licence.

He became firm friends with John O'Hare VK3BO (later 3OH), and was his second operator on the 200 metre band. Clive Holland and George decided to sit for their amateur licences in early 1937. Both passed — Clive became VK3XC.

In 1938, George was appointed projectionist at the new Midland Theatre, in Ararat. He stayed at my home until he had settled into the area.

A highlight of the 1940s was his participation in the Third Post War Western Zone Convention, when with others, he helped set up radio communication for the Westmores Rural Fire Brigade, the first network of its kind in Australia. Sets used were F56 and 108 transceivers, working approximately 96km (60 miles). Present were VK3AMP, VK3NWK and VK3MJ and at the dinner, visitors from the Country Fire Brigade.

George helped Kevin Duff VK3VC obtain his amateur licence.

A highlight for George was the three-and-a-half months he spent in the USA in 1970, during which he met many amateurs.

He retired from the movie business five years ago and thanked his lucky stars that he was an amateur. Privately, he was still interested in re-building old projectors, which he had at home.

It is noticed that two Old Timers who held the VK3GN call sign passed away suddenly within a short time of one another. (George Selman VK3CM, ex 3GN passed away on 18th September).

To George's widow Ade, and his family we extend our deepest sympathy.

Charles Nelson VK3WC AR

PARLIAMENT HOUSE WIRED

About 80km of coaxial cable, with nearly 1,700 outlets will be installed in the new Parliament House, now under construction in Canberra.

Philips Australia has won the \$1 million contract to cable the building which will be home to both chambers of Federal Parliament from 1988.

The building, designed to last 300 years, will incorporate the world's most extensive in-house communications system.

SEWING CIRCLE STORY

Bob Jackson VK7NBF

Falmouth House, Falmouth, Tas. 7215

The Tasmanian Sewing Circle is not what it seems. For one thing there is not a needle or reel of thread in sight. But, there are Morse keys, valves and aerials aplenty.

This name is a long-standing "nickname" for a group of about 50 dedicated amateur radio enthusiasts, mostly retired men, who get together each evening for a chat over the air-waves. They come from all over Tasmania and their conversation covers almost every subject imaginable.

The Circle began in 1962, when the late Jack Batchler VK7JB, and his friend Snowy Harrison VK7CH, maritime mobile on the MOORINA, had daily conversations on 80 metres. The mode used was CW, (it had to be as Snowy swears that he does not own a microphone, even to this day). Jack used an Army 122 set.

They were soon joined by the late Bob O'May VK7OM and others, but the mode changed to SSB when Snowy was not on the net. They earned their nickname one evening when the session delayed the Batchler's mealtime. Jack's wife, Joy VK7YL, said that the men reminded her of a sewing circle at school — a select group of students who were allowed to talk as they sewed. Jack protested that it was a strange comparison for a bank manager, a marine engineer and an Army officer. However, despite his protests, the name stuck and is still in use to this day.

In 1981, Joe Brown VK7BJ, presented a framed photograph of a sewing machine which was to be awarded annually to the most loquacious member of the group. For the past three years, a barbecue has been held at the home of Bill VK7NRV, where the presentation is made. The winner is the sole judge of the recipient for the next year. The current holder is Owen VK7OL.

Reference material The Southern Star AR



QSP

WE NEVER HAD IT SO GOOD!

"We understand that Mr Garner-Jones, Headmaster of the Levuka Public School, has been permitted to erect a wireless station at Levuka for the benefit of his pupils."

"We are quite in sympathy with this concession and we must congratulate Levuka's progressive headmaster on this achievement, but we cannot quite understand the attitude of the Government in refusing licences to those who are desirous of experimenting in the same line."

"It is reported from Lautoka that for erecting a wireless receiver a resident there has been fined four pounds."

So said the "Fiji Times" on 19th September 1911. Harry Cox VK4OX, was reading through the "Fiji Times Centennial Supplement" 4th September 1969 recently and came across the preceding article. Harry comment is "The written word should make all amateurs of all categories be truly thankful to the WIA and pioneers for what we have today!"

It may be of interest to cricket-loving amateurs, from the same paper, Ratu Kadavu Levu and his Bau eleven were invited, by the Melbourne Cricket Club, to play a series of cricket matches in Victoria. Kadavu was confident of victory against all-comers. This article was dated 29th June 1907.

THOUGHT FOR THE MONTH . . .

Minds are like parachutes — they only function when open.

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10D-FB	0.99	1.44	2.10	3.30
12D-FB	0.84	1.23	1.80	2.79
RG-B/U	1.95	N/A	N/A	7.44
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12D-FB	\$8.70m					13.70m

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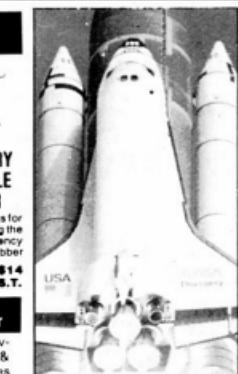
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SOLAR GEOPHYSICAL SUMMARY

OCTOBER 1985

Solar activity was low throughout the month with the exception of 26th October, when there was a single M1.8 solar flare. Prior to 15th October, the sun was mostly without spots and the 10cm flux was at low levels. After 15th, two regions began to grow rapidly and the flux rose rapidly to a peak of 80 on 22nd and 23rd. The growth of these regions culminated in the flare on 26th. Both regions were decaying rapidly as they rotated over the west limb on 28th.

10cm flux readings were: 1=2, 67, 3=69, 4=68, 5=67, 6=9, 66, 10=67, 11=58, 12,13=67, 14=70, 15=72, 16=74, 17,18=78, 19=78, 20=80, 21=86, 22,23=95, 24=94, 25=92, 26=85, 27=80, 28=78, 29=75, 30=72, 31=71. Average was 74.8. Sunspot average was 18.5. Running yearly sunspot average was 17.8 for 4/85.

GEOMAGNETIC

4-8 October. The geomagnetic field became disturbed after 1900 UTC on 4th and reached storm levels early on the 5th and remained at storm levels until the end of the 6th. It was generally active on 7th and 8th. A=15.42,33.21.

11 October. . .The field was at active levels A=17.

13 October. . .The field was at active levels A=16.

15-18 October. . .The field was at active levels with the most disturbed periods being 0200-0900 UTC on 15th and 0000-1300 UTC on 16th A=20, 16, 17, 18.

22 October. . .Field at active levels A=10.

The quietest days were 1=2, 26,27=3, 28,30,31=4, 2,20=5, 10,24=6.

The principle feature of the month was the intense magnetic disturbance on 5th and 6th.

SOLAR GEOPHYSICAL SUMMARY — NOVEMBER 1985

Solar activity continued at a low level. Two regions produced a slight chance of activity after the 10th. Both regions decayed as they crossed the disc and rotated off around 23rd. The 10cm flux was enhanced during the passage of these regions across the disc. The peak flux value of 86 was reached on the 15th. The sun was spotless from 1st until the 4th, then 23 until the 30th. For these periods the 10cm flux was in the low 70s.

10cm flux readings were 1,2=70, 3,4=69, 5=70, 6=71, 7=73, 8=75, 9,10=74, 11,12,13=76, 14=78, 15=86, 16=81, 17,18=79, 19,20=78, 21=76, 22,23=75, 24=74, 25=72, 26=71, 27=72, 28,29,30=71. Average was 74.3. Sunspot average was 16.8. Running yearly sunspot number 17.8 for 5/85.

GEOMAGNETIC

2nd-3rd November. . .The field was at active level to minor storm levels after 1200 UTC on 2nd, subsiding to unsettled levels around 1700 UTC on 3rd. A=28,22.

13th November. . .The field was at active levels with the most disturbed period being 1800-2400 UTC. A=22.

27th November. . .The geomagnetic field was at active levels particularly 0300-1600 UTC. A=15.

29th-30th November. . .A geomagnetic storm began at 0708 UTC and developed into a major storm by 1630 UTC. It lasted until 1400 UTC on the 30th when the field declined to active, unsettled levels. A=28,42.

The month was generally quiet with few very disturbed days until late in the month when the major storm started, a result of a coronal hole with the effects of a solar disappearing filament superimposed.

The quietest days were 20=2, 26=3, 24,25=4, 12,21=5.

IONOSPHERIC I INDEX

This index, a measure of the average level of the ionospheric critical frequencies available on a particular day — the higher the value of the I index, the higher the ionospheric critical frequencies (and maximum usable frequencies on HF circuits) for that day. The index is based on data from Australian ionospheric stations and so is most applicable to HF circuits with reflection points in the Australian region. They do not appear in the recorded information available on (02) 269 8814, VK2WI, during its Sunday Broadcasts, give a weekly summary along with the 10cm flux and A indices for the previous week.

For November they were: 1=—14, 2=—17, 3=—21, 4=—30, 5=—28, 6=—12, 7=—18, 8=—16, 9=—11, 10=—18, 11=—16, 12=—8, 13=—14, 14=—3, 15=—29, 16=—18, 17=—14, 18=—7, 19=—2, 20=—1, 21=—9, 22=—4, 23=—3, 24=—8, 25=—9, 26=5, 27=—17, 28=—2, 29=—18, 30=—81 — an average of 3.4.

IPS comments were: F2 critical frequencies were generally depressed far below IPS predicted values for the month. Due to the combination of low solar flux values early in the month the extended period of slightly disturbed magnetic conditions. The rise in the solar flux which was associated with the growth of the two regions on the sun produced a general rise in the ionospheric F2 critical frequencies towards the end of the month.

The Southern Hemisphere appears to have been effected by the magnetic disturbances to a greater extent than the Northern Hemisphere. Critical frequencies for the Southern Hemisphere have been mostly lower than equivalent northern values.

From data supplied by Department of Science, IPS Radio and Space Services AR

Be part of Today!



When we analyse the recent past and project the immediate future, computers and communications technologies play a vital part, but we must avoid the tendency to look only to the hardware level. The fact that technologists have appropriated words like 'communications', 'information' and 'data' and given them electronic rather than social meanings, should not disguise the fact that in the final analysis, communications involves people and ideas, not electronic bit and bytes.

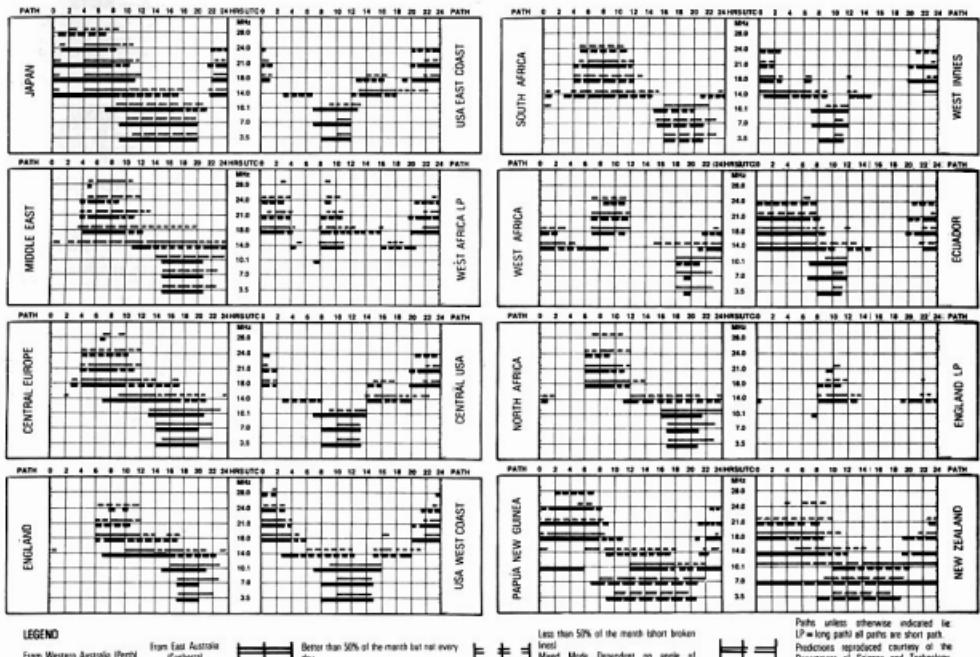
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Ionospheric Predictions

Len Poynter VK3BYE
14 Esther Court, Fawkner, Vic, 3060



LEGEND

From Western Australia (Perth)

From East Australia (Cairns)



Better than 50% of the month but not every day
luminous lines!

Less than 50% of the month but broken lines!
Mod. Mode Dependent on angle of
long broken lines!

Paths unless otherwise indicated i.e.
LP = long path all paths are short path.
Predictions reproduced courtesy of the
Department of Science and Technology,
Ionospheric Prediction Service, Systems.
All times in UTC.

Bill the Author

Bill was standing outside his front gate, looking anxiously along the street. It was about time the postman turned up with the latest issue of AR. He had to stand and wait for the postman because his letter box had fallen down and then been run over when Bill was backing his Holden out one day. He hadn't got around to fixing it.

The postman arrived on his bike and gave Bill some mail. It included AR. Bill tucked some letters into his back pocket and meandered into his shack for a quiet read. He had always looked forward to his magazine and today was no exception. He settled down, cool tin at his elbow, and started.

What was this? Computers again! There seemed to be more articles about the blessed things. Didn't they know that he wasn't interested in computers? Where were the articles about building things from junk boxes? What's all this about Packet Radio? Not to mention the satellite business. It was enough to drive any reasonable man to drink!

Bill sipped thoughtfully. It was about time they realised that this couldn't go on. He decided to write a Letter to the Editor about it. He hunted around until he found a fairly clean piece of paper and then sat and thought.

"Dear Sir, or Whom it May Concern", he wrote. No, that wouldn't do. He crossed it out.

"Dear Sir". That wouldn't do either. The Editor could be a woman. You never knew; they seemed to get into everything these days. He crossed it out again.

Ted Holmes VK3DEH
20 Edmonds Street, Parkdale, Vic. 3195

"Dear Sir or Madam". That would do. "I wish to bring (cross out) your attention to the fact that your magazine is getting (cross out) becoming more and more addicted (cross out) involved in printing articles about those damned (cross out) internal (cross out) computers. I should (cross out) would like to tell (cross out) let you know that I and many others are not the slightest bit interested in the things. Could (cross out) I request that more articles are printed about things that interest real people" — Bill liked that bit — "and not a minority of boffins. I remain, Dear Sir or Madam, whatever the case may be, William Blitheringwit, Licence Holder of many years' standing".

Bill read it through. Of course, it was only a rough draft, but it read well. It was about time somebody put a word in about this sort of thing. He took another sip at his can. Perhaps he could write an interesting article himself. After all, he had many years' experience which he could share with other less knowledgeable people and, in this way, could guide them along the right track. He made a mental note to get hold of an old typewriter.

Mrs Blitheringwit then yelled at him from the kitchen. Something about some letters. In the interests of peace, Bill hastened out to find out what she wanted.

The breeze of his passing caused his composition to float off the desk and descend to the cluttered floor, where it remained unnoticed. Bill then totally forgot about the whole idea.

CARNAPPING PREVENTION TIPS

Always lock all car doors when parking.
Never stay inside the car when it is parked.
Take your family members with you when you park.

Install safety and alarm devices whenever possible.

Clear the area of suspicious looking people before boarding or parking your car.

Always park in illuminated areas at night.
Remove all valuables from inside the car before parking is to preclude temptations.

Never entrust your car key to anybody else to prevent duplications of same.

Avoid hitch-hikers, especially beautiful women.

Park your car in secured areas as much as possible.

Provide necessary information to area security personnel of suspicious persons.

Install a hidden master switch whenever possible.

Never leave car windows open, especially during traffic jam.

Secure and lock garage doors at all times.
Drive your car to crowded areas if suspicious of being followed.

Remove vital spare parts like the rotor before leaving your parked car.

Verify prospective buyers before entrusting them with your car for testing purposes.

Entrust car keys to management when delivering the car for repair purposes.

From PARA NEWS, September 1985

A Call to all
Holders of a

NOVICE LICENCE

Now you have joined the ranks of amateur radio, why not extend your activities?

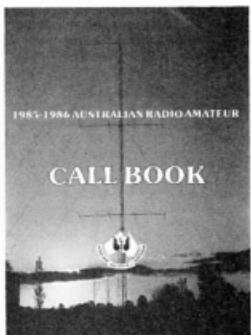
THE WIRELESS INSTITUTE OF
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(N.S.W. DIVISION)
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Throughout the Course, your papers
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CONCLUSION.**

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AR86

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LIMITED COPIES OF THE
1985-86 WIA CALL BOOK
ARE NOW AVAILABLE
FROM DIVISIONAL
OFFICES

Price: \$6.50 + P&P

AR86



DEADLINE

All copy for inclusion in the May 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by midday, 19th March 1986.

Hamads

PLEASE NOTE: If you are advertising items **FOR SALE** and **WANTED**, please write each on a separate sheet of paper, and include all details, eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.

- * Please remember your STD code with telephone numbers
- Edit lines free to all WIA members. \$9.00 per 10 words minimum for non-members
- Copy in typescript, or block letters — double-spaced to Box 300, Caulfield South, Vic. 3162
- Reprints may be charged at full rates
- QTH means address is correct as set out in the WIA current Call Book

Orders for Hamads submitted from members who are destined to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being resold for merchandising purposes.

Conditions for commercial advertising are as follows:
\$22.50 for four lines, plus \$2.00 per line (or part thereof)

Minimum charge — \$22.50 pre-payable

Copy is required by the Deadline as indicated below the indexes on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver & Transmitting Applications. For data & price list send 105x220mm SASE to: **RJ & US IMPORTS**, Box 157, Montdale, NSW. 2223. (No inquiries at office) Tel: 11 02 658 1222. Agents: Gandy Wood Electronics, Roselle, NSW. Tuscan Electronics, Croydon, Vic. Willis Trading Co., Perth, WA. Electronic Components, Fishwick, Plaza, ACT.

WANTED — ACTE

TRANSCEIVER: 2m either portable or h'theld in VGC, eg FT-290R. Also accessories: mic, charger, extra antennas, etc. Please contact Dan VK1ST, QTHR. Ph: (062) 58 5664 AH or 46 8296 ZB.

WANTED — NSWE

QST MAGAZINE JULY 1985: Please contact Mrs Hill at Felser Russel, 140 Phillip Street, (02) 221 1655 for Prof G Felser VK2ZGF.

WANTED — TRIBAND BEAM ANTENNA:

Hy Gain for 10; 15 & 20m. Garnet VK2CGF: Ph: (065) 53 7539.

WANTED — VICE

BFO COIL: to suit CR-100 or B-28 rx. Will purchase wrecked chassis. Controller to suit WWII MN-26 Radio Compass Type H, L or N. Frequency range 200-410kHz, 550-1200kHz & band 3 is 3MHz to 8MHz. VK3AQB. Ph: (03) 337 4902.

COMPLETE SET OF AMATEUR RADIO: for 1978. The Federal Office set have been borrowed and not returned. Costs reimbursed. Box 300, Caulfield South, Vic. 3162. Ph: (03) 528 5962.

WANTED — QLD

HANDBOOK FOR AVO VALVE TESTER: Model CT-160, circuit for Hammarlund Super PRO (early model) & dual gang wide spaced variable capacitor 200PF max approx. Len VK4JZ, 21 Hill Crescent, Carina Heights, Qld. 4152. Ph: (07) 396 2002 AH.

POWER SUPPLY: Filter chokes 2.5H, 1A, 250V or better. Ken VK4JPE (ex 4TPE), QTHR. Ph: (078) 27 1966 BH.

FOR SALE — ACTE

VAESU FT-1070M: 100W tx/rx. Incl in-built AC power supply, Memory module, WARCO bands, \$550 incl freight O.N.O. Realistic DX-302 rx. Covers 100kHz-30MHz in 6 bands, 12V or 240V operation. Ideal for SWL. \$200 incl freight O.N.O. Alan VK1KAL, QTHR. Ph: (062) 56 2568 AH or (062) 56 8115 BH.

FOR SALE — NSWE

ICOM IC-701 HF TCVR: PS-701 Power Supply ICRM-3 Controller. All in Ex Cond. \$890. Roger VK2DNX, QTHR. Ph: (02) 56 1927.

VAESU FC-700 ANTENNA COUPLER: Unused — cost \$195, sell for \$100. Geoff VK2POA, QTHR. Ph: (02) 467 2663.

VAESU FT-700 TCVR: 100W mobile. \$400. Icom IC-700C. Dual band, 144/430MHz. Fred VK2MEL, QTHR. Ph: (02) 567 2511. FM rx. 2.3, 4.6, 7.0, Ch 50, \$180. Ken KP-202 Dual band, 144/430MHz. FM h-held. Rep. 2, 6, 8, Ch 50, \$110. Realistic DX-150A HF gen rx \$40. VK1V, QTHR. Ph: (0648) 24 124.

FOR SALE — VICE

ASSORTED TRANSFORMERS: 88 each: BWG CRO 823 in EC 1/4W. 100 each: Rothko D-14049. Cost \$100. Peter Smith 78 cent. 10A. Dual meter, etc. \$100. Heathkit HM-16 VOM \$40. GDO 560, ATV Road Show BWB camera, tx rx & manual \$540. 4CX250B 150k & fans, bases, stacks. \$803 & base \$120 the lot. 2 x 5.6 beam, 8m or return for 10m. Werner fittings. \$100 each. Mal VK3KSA, QTHR AH.

TRANSCEIVERS: HF SB-34 brand made by Sideband Engineers USA. Complete size 20x12V, 1 trans. 1 rough for spares. Lots of data and PA valves. Faults in both but cheap at \$75 for two. Hidaka 20, 15, 10m trap vert ant. \$45. Peter VK3APS, QTHR. Ph: (03) 836 7458.

VIBROPLEX — THE ORIGINAL BUG: in immac cond, used less than 6 months sparingly. Landed cost today \$150, sell for \$75 plus postage. Roth VK3BG. Ph: (03) 670 3333 BH.

FOR SALE — QLD

APPLE II COMPATIBLE COMPUTER: with disk drive, 80 col/64k card, PAL colour card, Joy-stick. \$750. QTHR. VK4QKA, QTHR. Ph: (071) 21 5742.

TUBES: Elmeic 3-500Z, 30 hrs light usage \$350 pair or \$175 each. (sockets available). QBS-300A4/4-125A — new & used. Vacuum variable caps, 5-500Pf 5kVW \$50 each. Blower to suit 4CX250B + 110/240V AC. Brand new. \$50. Numerous other bits & pieces. John Bisgrove VK4ZJB, QTHR.

FOR EXCHANGE — VICE

TRIBAND HF CE-35DX BEAM: 5 elements with Wilson traps. Excellent VSWR & works well. Exchange for 3 element heavy duty tri-band beam. TH-3 Mk 2 or 3 of similar. Mal VK3KSA, QTHR AH.

bkp-mar005aa

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TS-430S



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**PRICES RISING!
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The TS-430S combines the ultimate in compact styling with its counterparts in advanced circuit design and performance. An all solid-state SSB, CW and AM transceiver, with FM optional, covering the 160 — 10 meter Amateur bands including the new WARC bands, this remarkable radio also incorporates a 150 kHz — 30 MHz general coverage receiver having an extra wide dynamic range.

TRIO-KENWOOD (AUSTRALIA) PTY. LTD. (INCORPORATED IN N.S.W.)

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